# Audubon

magazine

JAN-FEB 1952

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#### ALFRED M. BAILEY

One of the world's foremost naturalists, Dr. Alfred M. Bailey, Director of the Denver Museum of Natural History, has made that institution an example for other cities to follow. He is author of "Birds of Arctic Alaska", has contributed to many magazine. Dr. Bailey has visited five continents to gather the material he now presents in his nation wide motion picture lectures under the auspices of the Audubon Screen Tours.



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# Audubon magazine

Volume 54 Number 1 Formerly BIRD-LORE

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A bimonthly devoted to the protection and preservation of our native wildlife. Fifty-fourth year of continuous publication

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### Letters

#### Ornithology by Mail

Can you please advise as to the availability of home study (correspondence) courses on the subject of ornithology? I am interested in taking one or two such courses for college credit but I have not yet been able to locate any college or university which offers such courses. Your assistance in this matter would be greatly appreciated.

MRS. D. S. COLLINS, IR.

Jonesboro, Arkansas

EDITORS' NOTE: We do not know of any correspondence courses in ornithology, and would be pleased to learn details if any reader has such information.

#### A Lingering Thrasher

With all the intensive bird study going on today, has anyone suggested some way one could persuade a cold thrasher to go South?

I have had one in the garden for most of three weeks. He is no democrat as he won't feed with the bunch, and he is not quite a gentleman as he will grab the food from any single bird that comes near enough to where he is watchfully waiting. Five degrees above this morning. I see him sitting in a spruce in the sun.

G. RAE CALLANDER

Montclair, New Jersey

Editors' Note: Just why some birds fail to join their migrating brethren is not definitely known. Perhaps they are too old for the long flight, injured, or lured by an abundant food supply.

#### **Thinking Like Birds**

I realize that you cannot often give space, as in the case of Mr. Van Cleef, to amateur observers of birdlife, but it seems to me we must seek a radically different approach to his question "Do Birds Think and Exercise Judgment?" (Sept.-Oct. 1951).

To my admittedly limited vision, scientific opinion on the subject of bird thought is currently in the doldrums: it appears to vacillate between anthropomorphism and automatism. "Every objective search for scientifically acceptable proof (of reasoning)" will likely continue to be "completely unsuccessful" so long as we



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continue to use human yardsticks to measure bird thought.

We recognize that birds have special qualities of ear and eye, and that they have mysterious perceptions we cannot yet explain. We see them walk like birds and run like birds; should we not add to our observation they think like birds?

MORRIS N. JACKSON

Fanny Bay, British Columbia



Audubon Magazine in Japan

My picture, as you can see, shows me while I'm quite happy. I can forget bad times when I'm reading Audubon Magazine.

My hobby, or rather I'd better say, my hope, is to spend my whole life in the mountains or fields, getting up early in the morning with wild birds, working while listening to their songs, and going to bed when they return to their nests.

I do want to say very belatedly that the article about Japan, "Where Trees Are Venerated," (March-April 1949), interested me so much. Roger Baldwin wrote about Japanese land and Japanese natural resources so perfectly that I was much surprised. Besides he quoted the most famous Japanese phrase explaining that a mountain should be honored not because of its height but because of its trees.

KAZMO UMEZU

Tokyo, Japan

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#### Cover Picture-Nov.-Dec. Issue

Through an oversight Mrs. Leafie Watt did not receive credit for her cover picture in our November-December 1951 issue.-The Editors Oakland, California

When I received word that you had used one of my pictures for the cover of Audubon Magazine I was naturally much excited. You might be interested to know that the basket from which the chickadee was eating is over 100 years old.

LEAFIE WATT

Franklin, New Jersey

#### Our Need For "A Glory"

My congratulations on your wisdom and good taste in selecting Alan Devoe's article "Audubon, Painter of a Vision" for your September-October 1951 issue. After reading this fine piece of writing, I turned back to the contents page and mentally put my own "Don't Miss" in the margin beside it. It seems to me that, for too long, too much emphasis has been put on numerical statistics and Latin labels with regard to birds and too little on their esthetic value to man; and this at a time when there has seldom been a more pressing need for "a glory."

MRS. ELMA DEAN

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#### By Robert S. Lemmon

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At the southern end of Island Beach, one can look across Barnegat Inlet to one of the oldest lighthouses in New Jersey.

All photographs by the author, unless otherwise noted.

For more than 1,000 years, plants and animals of these dunes have fought a grim, ceaseless battle to conquer the sand, the wind and the sea.

THE STORY OF

# Island Beach



On a narrow New Jersey beach lies the last primitive country of its kind along 1,000 miles of North Atlantic coast. Can we save it from destruction?

#### By John K. Terres

I FIRST visited Island Beach shortly after sunrise on a beautiful day in September several years ago. I had explored the northern, older part of this unspoiled land which, for 10 miles south of Seaside Park, separates Barnegat Bay from the Atlantic Ocean. Within its narrow width of only three-quarters of a mile, I had seen sand hills covered with gray reindeer moss and Hudsonia, and cedar and holly forests overlooking Barnegat Bay on the west. This is a community of plants so old that it may have had its beginning when Charlemagne





began his war of empire more than 1,000 years ago.

Deeply stirred by the wild, dark beauty of this ancient land, I had turned east to climb the row of sand dunes that hid the sea. As I reached a dune's top, the whole panorama of ocean and sky suddenly lay before me—an immense vault of blue above, the limitless gray ocean below, stretching away to the eastern horizon to meet the fire of the rising sun. There are times when the great beauty and loneliness of a scene are almost overpowering, but here, for the first time in my life, I felt as though I stood alone on the morning of creation.

For miles southward, white sand dunes stood in an irregular line, their eastern faces tinted golden in the morning sunlight, their backs purple with their own shadows. Not even a surf fisherman moved in that world of sand, blue sky, water and misty distances. Only flocks of gulls, wing-dipped, rose, and then swooped down over the white-crested waves, their mewing voices lost in the wild thunder of surf breaking upon miles of open beach.

This was the Island Beach of which I

Great flocks of gulls swoop down over the waves, their mewing voices lost in the wild thunder of surf breaking upon miles of open beach. Photograph by George A. Shull.

It is in the "heather-balds"—the cedar, holly, and *Hudsonia* area—that the strange and lovely beauty of Island Beach prevails.



had heard so much and of which I was to learn so much more. Here I stood, at last, looking upon 2,200 acres of the only primitive duneland and coastal forest left unchanged by man on the New Jersey coast. I saw it now as the Indians knew it hundreds of years ago, as the white man first saw it in the sixteenth century. An island no longer an island, this narrow strip had been a peninsula since 1812 when the ocean swept in the sand upon which I stood and had swiftly joined the island to the mainland.

It is difficult to look on this peaceful beach, this quietly dream-like land of dunes and believe that it is in a constant turmoil. a ceaseless stir, but so it has been for centuries. Hordes of shorebirds - sanderlings, plovers, curlews, godwits, and a host of others-tread these sands along the dune fronts each year in their autumn journeys to South America. From August to November, hawks, swallows, flickers, thrushes, warblers and kinglets swarm in the bayberry, greenbrier, beach plum and pine thickets. Here they rest and feed during their travels southward, making Island Beach, in fall, one of the greatest concentration points for birdlife along our North Atlantic coast.

Even more spectacular than the great autumn bird flights at Island Beach are the immense migrations of the big monarch butterfly that periodically flutter over these dunes and thickets. One day in September, Charles Urner, a distinguished New Jersey ornithologist, counted here in a few hours more than 100,000 of these brightly-colored butterflies. In clusters of brilliant orange, thousands rested on the seaside goldenrod and beach grass of the dunes; others flew down the beach in single file as they resumed their flight to the southern United States.

Equally dramatic, but less understood, are the enormous armadas of migrating dragonflies that pass southward here each fall. Like squadrons of tiny warplanes they sweep down over these dunes, their transparent wings glittering in the sunlight. Even more mysterious are the fall flights of the lemon-yellow, great sulphur butterfly that drift northward along Island Beach in a reverse migration that has puzzled scientists for decades.

Although Island Beach is noted for its great bird and insect migrations, it is even more famed for its unusual animals that dwell here permanently. The plant groups, living together within a restricted area, are not found associated similarly anywhere else on our continent. For more than 1,000 years, these plants, and the animals that live with them, have fought a grim, ceaseless



battle to conquer the sand, the wind and the sea. So dramatic is this struggle that it probably cannot be equalled, even in our southwestern deserts where the contest for life is especially fierce.

In this war for survival, it is the beach that is the front battle line. Here, plants, crashing waves and sand are endlessly locked in a seemingly desperate engagement. The fleshy-leaved sea rocket, a plant related to wild mustard, has established itself on the middle beach. Within its thickened leaves it stores water to protect it against drouth, and its strong, partly woody stem resists the wind, yet one great ocean storm can uproot the adventurous colonists and drive them back upon the higher beach. Here the pale ghost crab, the only large crustacean that has left the ocean to live upon land, darts about in search for its distant cousins, the little sand fleas that live under piles of wet seaweed washed upon the beach. The sand fleas live upon the scaweed, the ghost crab eats the sand fleas.

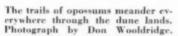
A large shadow falls across the sand, and a stalking, sharp-eyed heron may stab its rapier beak through the ghost crab before it can reach the safety of its burrow in the sand above the tide line. If the heron does not strike true, a higher than usual tide may sweep the ghost crab into the sea where it is a quick victim of a hungry lob-ster or a channel bass.

These are some of the dramatic incidents in the life of the ghost crab, but to my knowledge a complete life history of this interesting animal has never been written.

Even the small shorebirds that travel along the ocean front are caught in this perilous drama of life and quick death on the sea beach. Across the sands, a little graywhite sanderling, pale as the dunes, runs into the shallow water of a receding wave to catch a hippa crab. One of its twinkling legs is suddenly caught in the vise-like grip of a surf clam. The little bird struggles furiously to get out of the trap that it has accidentally sprung, but the next onrushing wave sweeps it under water and out to sea.

Farther from the ocean, above tide line, plants are savagely tested by the winds that tear at the dry, shifting sands. Their battle to survive, either burial by the wind-propelled sands, or complete exposure of their roots, is an endless series of successes and failures.

At the bases of the white dunes and over their flanks, clusters of sea-beach sandwort live by sending long, moisture-seeking taproots down to the wet sub-sand. Like the







sea rocket and desert-dwelling plants, this sandwort has developed, besides fleshy leaves, swollen stems in which to store water. Companion to it, the beach grass, Ammophila, spreads its long horizontal rootstocks, pinning down the sands from the clutch of the battling winds, and the beach pea, a striking example of success in a difficult environment, covers the dry dune faces with its pale green foliage and pink-purple blossoms, so much like our garden sweet peas. This plant owes its survival on the dunes to a water-saving habit that seems almost human. On hot, clear days it raises its thin leaves, like uplifted hands, and holds them edgewise to the sun so that they lose a minimum of moisture. As the sun sets and the air grows cooler, it lowers its leaves until they are flattened and able to absorb the moisture of the night. Thus it recovers water that it lost, or used up, during the

In these dunes the white beach spider sinks its tunnel and waits at its doorway



Six kinds of herons and egrets live in a grove of pitch pines. Photograph by Roger Tory Peterson.

Along the bay shore, waves pile windrows of widgeon grass, uprooted by waterfowl wintering on Barnegat Bay.

Thousands of migrating monarch butterflies rest on the plants of the dunes. Photograph by Edwin Way Teale.



JANUARY-FEBRUARY, 1952



Clapper rails, marsh hawks, and other birds dwell in the salt marsh bordering Barnegat Bay.

for wandering insects of these sandy wastes. Sometimes it attacks and kills the green wasp which hunts flies for its larval young, but death comes to the beach spider when the Ethiopian wasp, a creature that also digs her nursery in the dune sands, attacks the spider, stings it, and carries it to her burrow. There it will provide food for this wasp's larval young when they hatch.

So isolated have some of these dune animals become that they resemble a race apart from the dark forms of their kind that live on the mainland. Besides the white beach spider, a grasshopper, tiger beetle, toad, and the Ipswich sparrow and piping plover of these ocean beaches are gray- or snow-white like the pale sands that they live upon. How this color change, blending an animal with its beach environment, has evolved, is a mystery of which the details are still to be solved by students of natural history.

On the grassy backs of the dunes protected from the sea winds, and in their rounded hollows, foxes come to catch rabbits or to dig for the white grubs of June beetles that live on the roots of grasses. Here, by the record of a fox's tracks that I saw one morning, it had stopped digging to spring upon a beach mouse. The trail of the mouse ended where a few drops of its blood stained the white sand.

The trails of opossums meander everywhere through the dune lands. One that I followed on a cold January day led over the sands to the ocean beach and to the dead carcass of a herring gull. Like the gulls themselves, the Island Beach opossums are scavengers that help clear away the dead birds, whales, fishes and other animals cast up here by the ocean.

The salt marsh, bordering Barnegat Bay, helps support a heron rookery on Island Beach. From their nests in a grove of pitch pines, herons and egrets of six different kinds travel to the salt marsh to catch fiddler crabs, mice, snails and other creatures they find there. The fiddler crab thousands, living in burrows in the soft mud, are one of the most abundant of the larger salt marsh animals. Gulls, clapper rails, curlews and other birds feed heavily upon them. For all its abundance and importance as a food for many coastal animals, a complete life history study of the fiddler crab is yet to be made.

The marsh samphire, or glasswort of the salt marsh, is another of the strange and interesting plants of Island Beach. Its seeds are eaten by wild ducks, and wild geese crop its fleshy stems. Every branch of this candelabra-like plant is pulpy and swollen, resembling the stems and leaves of the sea rocket and sandwort of the dry beaches, but the samphire grows in water, not in dry sand. It is believed that its tissues store the salt water in which it grows because it cannot immediately assimilate it. This is another problem at Island Beach about which

scientists have not yet discovered all the facts.

Perhaps no other seashore plant has such a spectacular autumn color as the marsh samphire. Its glowing red spikes resemble the scattered fires of red hot coals and it is assumed that the salt water environment in which this plant grows produces its brilliant fall color. Most of the seacoast wildflowers—rose mallow, gerardia, marsh pinks, beach pea, and many others—are pink, pink-purple, or rose. Is it salt water, or the ingredients in the sand, that produce these colors? This question has never yet been answered satisfactorily, but it might be solved by studies at Island Beach.

It is in the "heather-balds"—or the cedar, holly and *Hudsonia*, or beach heather area—that the strange and lovely beauty of Island Beach prevails. There is a sadness here, evoked perhaps by the dark cedars and the rich carpet of *Hudsonia* that looks almost

black in the pale sunlight of a late autumn day. This is the most interesting part of Island Beach at any time of the year, but in late May and early June, the golden-yellow bloom of the *Hudsonia* covering these sandhills is one of the great but little-known wildflower spectacles in the eastern United States. Comparable to the dogwoods at Valley Forge, or the rhododendron blooms of Great Smoky National Park, the beauty of the *Hudsonia* alone would justify preserving Island Beach as it is today—as it has been for centuries.

In this area are the most brilliant fall and winter displays of wild holly left on the New Jersey coast, and the rare and little-known curly grass fern, growing in the *only* white cedar bog on the coastal strip of New Jersey. Near the curly grass fern, and apparently always a companion to it, the delicate Carolina club moss here reaches the most northern part of its range. In this

In the only white cedar bog on the coastal strip of New Jersey, grows the rare and little-known curly grass fern, discovered in 1805.



## **Red - Breast**



"I found the female nuthatch digging a second nesting hole in an old poplar stump." Photograph by Henry H. Graham.

## makes a home

Nesting time may cause strange behavior in a female nuthatch.

#### By Louise de Kiriline

THE fall, winter and spring of 1947-1948 was a record year at Pimisi Bay, Ontario—for evergreen cones, finches and redbreasted nuthatches. In the first week of September the nuthatches had discovered the wealth of cones in the tops of the balsalm firs, small and tall. The next time I looked, every balsam cone appeared "motheaten" at the top. Gradually, the nuthatches, assisted by evening grosbeaks, crossbills and pine siskins, stripped the cone stems from top to bottom. By January of that winter, the firs looked like Christmas trees decorated with empty bobbins.

It was one day in November that a female red-breasted nuthatch came to the Loghouse\* feeding station. Upside down on the trunk, with her bill in the air, she watched with an interested eye as a chickadee fed at the feeding station outside my window. The next moment she came over and perched bravely on the bar to which a piece of suet was attached. She quivered her wings, persuasively I thought, as if she wished to draw the attention of a bird I could not see. She gave point to her gesture by uttering a string of "te-te-te-te-te-te-te's," slow, faster, then very fast. Taking some suet, she flew off.

<sup>\*</sup> The author's home on Pimisi Bay, Ontario, Canada, where she maintains a bird-banding station.

The next instant a fine-looking male alighted on the bar. He took a sunflower seed from the chickadees' tray and, without knowing exactly what to do with it, departed. A moment later he was back for another seed. Precisely and purposefully he did this and with a mien of knowing what he was about. This was the beginning.

The next day the male entered my banding trap quite unawares. When banding him, I put a red band on his right leg, wherefore he was named Red. Shortly after, the female also entered the trap. Desperately she struggled in my hand and scolded and hissed loudly as she found herself a prisoner. Red heard her and immediately attended her. He hung from a twig above us and said, "te-te-te-te," anxiously. This, evidently, had a soothing effect on the bird in my hand, for she went limp and resigned herself to the inevitable. On one of her legs I placed a blue band. Bluey later became the "leading lady" in the development of this story.

After the first advance, it took the nuthatches no time to feel at home at the feeding-place. Though as a rule not overly aggressive, the nuthatches commanded caution in the chickadees, merely by sitting back on their heels with wings and tails spread fan-wise. In vain chickadee opened his bill in wordless self-defence, in vain he raised what he called his crest to shoo away his opponent—the nuthatches refused to be impressed.

By this time another pair of nuthatches had invaded the feeding-place and, in the course of the winter, two more pairs arrived, and a single nuthatch or two. How long these pairs had been traveling together was a matter of guessing, depending perhaps on circumstances and age. Young birds, I have learned, are more apt to wander singly until a likely partner comes along.

The close attachment between the members of a pair of nuthatches was obvious by their constant animated dialogues, their comings and goings together, and their wing-quivering when approaching close to each other, particularly on the part of the females. Furthermore, an unpaired bird, arriving, never stayed unless there hap-



pened to be around an unattached member of the opposite sex. As this was in the off-season when conjugal bonds between birds were usually dissolved, it points to the possibility that red-breasted nuthatches, like the white-breasted, remain paired throughout the year.

The arrival of a new nuthatch, especially a male, caused great perturbance among those that already considered themselves in residence. Challenging the intruder by intensive "yanking" and defiance written all over them, they hopped along the branches posturing with wings dropped and stubby tails in the air, an eloquent way of requesting a speedy withdrawal from their midst. Nothing daunted, the new bird generally answered in kind. Ridiculous to behold, these demonstrations often went on from 10 to 15 minutes, before the desire for food toned down nuthatch feelings. Then, absorbed in their feeding, the established nuthatches allowed the newcomer to come to the seeds and suet.



"In the first week of September, the nuthatches discovered the cones of the balsam firs. Photograph by Allan D. Cruickshank.

Thus we settled down for the winter. There was a short period when much snow and cold weather prevented these side shows, for bird energies must be preserved if birds were to survive. But even then it was evident that some spring-like instinct stirred deep in the nuthatch heart. So, in the midst of the din and competition, members of various pairs and of both sexes would alight on the birdhouse in the red cherry tree or at the edge of an old woodpecker hole, crawl around the opening and peek in, for a while wholly absorbed in its possibilities as a nesting site. Not that any of these would be considered seriously as prospective nest holes, but a cavity is inviting to a nuthatch, even in the middle of winter.

When the sun of February began to eat up the snow, intolerance between the males that were now zealously guarding their mates gave rise to prolonged chases at the feeding-place where they met.

Of a sudden, a whirlwind of nuthatches

whizzed madly around a tree or zigzagged in and out among bushes and trunks, accompanied by a chorus of excited "thrrrrr" notes. By this time the worst of winter was over and it was no longer necessary for the nuthatches to conserve their energies to survive. One early morning in March, with the thermometer at 12 degrees below zero, a male, with a gesture of male concern for the female as old as the ages, fed suet to his begging mate twice, for she was hungry.

It was at this time that my ear gradually became attuned to the nuthatch song. Vociferous as the nuthatch is in his stuttering way, only after a while I realized that a new long-drawn series of notes, "wewewewewewewe," was the prolonged song of a nuthatch, as meaningful as any other bird song. It was slightly reminiscent of the junco's song, but a little harsher, though neither unmusical nor lacking in emotion. Later, at other incursions of red-breasted nuthatches, I heard it too, and always after

I saw the first "chase" between the birds.

On March 29, walking high on hard crusted snow, I stopped to listen to a faint knocking. To my surprise, because it was still so wintry in this latitude, I found Bluey, the female nuthatch wearing my blue band, clinging to an old poplar stump, excavating a round hole about 15 feet from the ground. She hacked away at the rotten wood so that her whole body shook. Occasionally, she threw herself backwards and released a shower of debris over her shoulder. Without relinquishing her toe hold on the edge of the hole, she kept working for eight minutes. Then she left to eat at the feeding-place.

A week later, on April 6, she took me by surprise when I found her at least 500 feet from the first hole, up a place I call the Second Ravine, excavating a new hole in the top of another rotten poplar stump. She was tremendously busy, yet found time to quiver her wings at Red in a near-by tree and to chase away a chickadee that came along quite innocently. It was as if the hole-drilling that was first on her agenda, ought to be interrupted by demonstrations which also belonged to the occasion, such as a little loving and a little chasing, in order that the ritual might be carried out, and in the correct sequence. At any rate, it was Bluey that kept the wheels rolling at a fast clip in these significant pre-nesting activities of this pair. Nest-hole excavating is usually shared by mated red-breasted nuthatches. The assistance Bluey got from her mate might have been glamorous to her, but Red certainly did not give her constructive help.

Four days later, I found Bluey back again at the first hole in the old poplar stump. That her work had progressed considerably here was obvious, since she disappeared far within the cavity. Out of sight, she worked in the hole for many long seconds. Then shuffling along to the entrance, first her upturned bill, full of debris, appeared, then she popped out. With a cute little throw of the head, she scattered her load of shavings upon the passing winds. Red was in attendance, courting her. The feathers of his rump stood erect, his wings quivered deliciously, and his head feathers rose

and fell with the rhythm of his excitement, as he sidled to and fro on a branch or up and down the trunk of a tree conveniently near her. And all the while he sang with his bill closed, a whispered song on a high note: "Thiiiirrrrrr!"

Twelve days later, on April 22, Greenie, another female red-breasted nuthatch which I had banded with a green band, was excavating a nest chamber in an old poplar stump not far from Bluey's second nesting hole in the ravine.

By all rules and regulations, Bluey ought to have been contemplating the laying of her first egg in the first hole by this time. Instead, here she was back again, not lawfully engaged in her own business, but brazenly watching Greenie with an interest that was quite unseemly. As Greenie left her hole for a rest, Bluey quivered her wings at her, and Greenie responded. With so many onlookers around, no wonder that Greenie, a timid little soul, hesitated before re-entering her hole, but she finally did and once more set to work deep down inside.

That Bluey's presence had been, to me, of malicious and dishonorable intent was fully confirmed when, three days later, I found her in possession of Greenie's hole and nest chamber. She popped out as I came along, hopped around the opening, plainly proclaiming her ownership, and then popped in again, impudence radiating from all over her. From what I knew of Bluey by now, I could easily imagine how she had simply waited and slipped in when nobody was looking, and then defied anybody to step over that threshold. Under such circumstances, a braver bird than Greenie would not have had a chance to do anything, and Greenie and her mate now moved off to West Hill, far away from their lost castle. Here, in another old poplar stump, they chiseled out another abode, just as fine as the first one.

Knowing that no one may forever transgress with impunity, sooner or later I expected vengeance to fall upon Bluey for her rash popping into houses that did not belong to her. I next saw her making the mattress upon which the eggs and young

were to nestle snugly, deep down in the usurped nest chamber. The male helped her collect tendrils, dead pine needles and fine birch bark, but he forebore to enter the hole and offered her his share of nesting material at the entrance where she grasped it and took it inside.

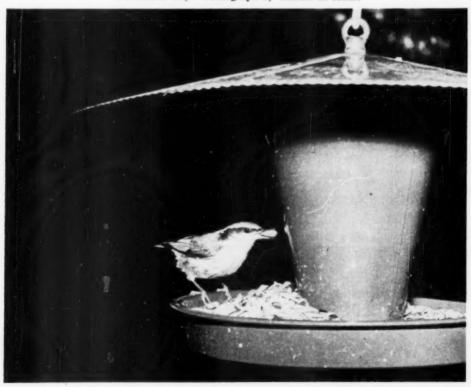
Five days later Red put his seal upon the nest hole. He came with a glistening ball of pine gum in his bill. This he smeared all around the opening and for a long time the gum attached him to the hole with long, elastic, golden threads that were loath to let him go. By his movement and his expression, one was impressed by the importance of this undertaking. It was a task he shared with no one and which required endless inspections and the dabbing on of more gum many times. When

finished, the entrance was surrounded by a sticky ring of gum, an inch-and-a-half wide, to which floss and fluff, sailing along on the light spring breezes, fastened and draped themselves, partly covering the hole like ragged gossamer curtains.

Deep inside, Bluey was laying her prescribed clutch of five to seven eggs behind that seal and sign of her mate, which to those who know the secret of the nuthatch, read plainly, "Caution, this nest hole is occupied!" But to those who know nothing of nuthatch traditions, that entrance hole might have looked abandoned.

In spite of my fears for Bluey's impudence in dispossessing another, her story had a happy ending. Eventually, Red and Bluey safely delivered to the world a large and animated family.

"The red-breasted nuthatch took a seed from the chickadees' tray." Photograph by Charles E. Mohr.



### THE MYNA IN

# Asset or

#### By J. d'Arcy Northwood\*

THE introduction of foreign or exotic animals or plants into another country is always potentially dangerous. In its own land each animal fits into an ecological niche where it finds conditions suitable to its way of life and where it is controlled by its natural enemies. Put it into another en-

vironment and several things may happen.

If unable to find suitable food or to compete with the native inhabitants, it may disappear, or if it becomes established, it usually does so at the expense of native species. Its increase is usually sudden and the animal may develop different habits from those it possessed in its native country. Even the gentle skylark developed economically undesirable habits when taken to New Zealand, where it fed largely on turnip

 Author of "Familiar Hawaiian Birds," published by T. Nickerson, Honolulu, 1940.

All photographs by the author.

The house myna was brought to the Hawaiian Islands from India in 1865.



# HAWAII Liability?

seeds. Everyone knows of the tremendous destruction to Australian plants with the introduction of rabbits there. The histories of the house sparrow and starling in the United States are also examples of the unfortunate introductions of foreign species, with the added fault of their dispossessing less vigorous but more attractive native species.

The introduction of the house myna into Hawaii has been both favorable and unfavorable. It dispossessed no native birds, it helped control an "insect scourge," and it competed successfully with the aggressive house sparrow, also introduced there. In towns, its roosting habits have become a nuisance, and it destroys some fruit, but it is an amusing and entertaining bird.

The house myna, Acridotheres tristis, was brought to the Hawaiian Islands from India in 1865 by Dr. William Hillebrand to combat the plagues of armyworms and cutworms on the sugar plantations and ranches. In the larval, or caterpillar, stage these moths (Cirphis and Spodoptera spp.) are very destructive to young sugar cane and to grasses. Making sugar is Hawaii's main industry and there is no doubt that the mynas were very effective in destroying the caterpillars, which at one time threatened destruction of sugar cane crops. Flocks of mynas would collect when an outbreak occurred and greedily devour the caterpillars. Even though insect parasites now control these caterpillars better, the help of the myna at a critical time in Hawaiian agricultural history must be acknowledged.

The myna belongs to the starling family



The white-eye, which reminds one of an American vireo, was first introduced by the Board of Agriculture and Forestry in 1929.

and looks like a large starling, with a yellow beak, strong yellow legs, and a bright bare patch of yellow below and behind the eye. In flight it shows large white patches in the wings. Its swaggering walk is a starling's, only more so, and when walking it rolls from side to side; if in a hurry it hops with bounding leaps. Some of its notes are almost musical, but usually they are raucous.

Mynas are sociable birds and even when they are nesting, seem to have no clearly defined territories. The feeding grounds are more or less communal and there is usually no chasing and fighting between males in defense of territory, but occasionally they do fight strenuously. Almost everyone who has seen mynas in the wild will describe one of these fights as "trials." The usual interpretation is that one bird is being punished for some infraction of the myna code, but probably the correct explanation is a mating quarrel, two male birds fighting over a female. Generally two mynas with claws interlocked are struggling on the ground. All around are mynas, gabbling and squawking, which probably gather to watch the fighting mynas and share in the excitement of the struggle.

The habit of mynas in roosting together in large numbers has not endeared them to their human neighbors in Hawaii. Often they will choose a large banyan tree for the roost, and just before sunset, flocks of mynas will approach it from all directions. The first ones to arrive find plenty of suitable perches and settle quietly, but latecomers arrive and argue about a favorite perch that may be occupied, or they may just raise their voices on any pretext. The din when some hundreds of thousands of birds are shouting together is unbelievable. Gradually they quiet down but often some disturbance will start them off again, even in the middle of the night. At daybreak the noise starts up again as they leave for their feeding grounds.

The Royal Hawaiian Hotel, on the world-famous Waikiki Beach, had a myna roost in the big banyan in the court. The guests did not welcome being waked up by the early morning chorus from the birds. The hotel management tried shooting guns and firecrackers to get the birds to leave. Ropes were tied to the branches and were jerked at intervals but nothing would make the mynas stay away from their chosen tree-roost for long. There was the same problem at Queen's Hospital. One has more sympathy for the sick people who were subjected to the noise of the roosting birds, but nothing would move the mynas.

One of the first birds that the newcomer to the Hawaiian Islands will note is the myna. In the downtown district of Honolulu, one may see other introduced birds—a few house sparrows and, perhaps, doves—the Chinese turtle dove, introduced from the Orient many years ago, and the Aus-

tralian ground dove, imported by the City and County of Honolulu and Maui County in 1922.

In the residential areas one may also see eastern cardinals, Brazilian cardinals, white-eyes, hill robins and linnets (house finches). The eastern cardinal, Richmondena cardinalis, was introduced from the United States in 1929 and is now well-established. The Brazilian cardinal, Paroaria cucullata,

The myna's habit of roosting in large, noisy flocks has not endeared it to its human neighbors.



a popular cage bird in South America, is established and there seems to be little conflict between it and the eastern cardinal, both of which live entirely in the residential areas.

White-eyes, Zosterops palpebrosus japonicus, belong to a widely distributed Asiatic genus and were first introduced by the Board of Agriculture and Forestry in 1929. They remind one of American vireos in appearance, but are as lively as our small warblers. White-eyes live in the lowlands and throughout the forests of the Islands to high elevations. They are principally insect-eaters, but people frequently com-

plain that they damage fruit.

Hill robins, Liothrix lutea, introduced on Kauai in 1918 and in 1928-29 by the Board of Agriculture, were at home first in the forest and then spread to the low-lands. They are lively, attractive birds, and as far as I know there are no reports of

damage by them to crops.

Linnets, Carpodacus mexicanus, were established prior to 1870 in Hawaii and the first ones were probably escaped cage birds. The majority of the linnets in the Hawaiian Islands show yellow or orange in place of the pink and red colors of these birds in the western United States. They have also been accused of destroying some fruit.

The myna has often been blamed for the disappearance of the native Hawaiian birds, but there is very little evidence supporting this. It is doubtful if there were ever many native birds in the lowlands, where the myna has its headquarters. It does penetrate the forest to some extent but its nesting habits and food do not conflict with those of the native birds, which are mostly nectar-eaters. The native birds disappeared for other reasons. They were highly specialized and could not adapt themselves to changed conditions. Above all, as has been pointed out by George C. Munro,\* they had no immunity to introduced bird diseases, which is probably the chief reason for their disappearance. A remnant has survived and is increasing. Perhaps it represents birds that have gained some immunity.

The native birds referred to are chiefly members of the Drepanididae, one of the most interesting bird families in the world. No one knows their exact status, due to the small numbers of the rarer birds, the difficulty of exploring the vast areas of trackless forest which they inhabit and the scarcity of qualified observers. It is quite possible that some of the supposedly extinct birds still exist. I myself watched a Hemignathus on Oahu, a bird that had not been reported for 50 years. W. A. Bryan says, "The Island of Oahu can make the melancholy boast that it has a greater list of extinct birds in proportion to the total number of species known from the Island than any other like area in the world."

The disappearance of any or all of these birds has been blamed on the myna, probably unjustly. They have not gone anywhere; they died out, apparently about the turn of the century. In the 1890's Palmer and Perkins found them plentiful; Henshaw ("Birds of the Hawaiian Islands," 1902), who came later, gave several possible reasons for their disappearance, such as inbreeding and inability of highly specialized forms to adapt themselves to changing conditions. He noted the presence of tumors or swellings on the feet of most of the birds, particularly the woodland birds. Here is evidence that disease was prevalent. Today this disease is common among the introduced linnets, many have tumors on the feet and legs and even on the head.

Other bird diseases are now known. Paul H. Baldwin has found tapeworms and malaria in birds which he examined. Early authorities seem unanimous in condemning the myna for the destruction of nests and eggs of native birds, but fail to give specific instances. Writers in the present century are more moderate and some even praise the myna.

Mynas are fond of fruit and anyone who raises fruit in Hawaii, especially figs, will have trouble with mynas. Around 1930 a few house mynas were discovered at Los Angeles, California. They had evidently

<sup>&</sup>quot;Birds of Hawaii," Tongg Publishing Company, Honolulu, 1944.

<sup>&</sup>quot;Natural History of Hawaii," Honolulu, 1945.



Even the nest of the introduced white-eye resembles the nest of our American red-eyed vireo.

been introduced surreptitiously and were soon destroyed. Nobody in his right mind would welcome mynas in California. They fould easily become established there and so do great damage. There is another myna established around Vancouver, British Co-

lumbia. This is the crested myna, Aethiopsar cristatellus, and it has been reported from Washington and Oregon. Its further spread in the United States is viewed with considerable apprehension.

Another bad mark against the myna in

The introduced Chinese turtle dove had a share in the spread of the exotic lantana, a tropical American plant.



Hawaii is the spreading of the lantana, Lantana camara, a native plant of tropical America. It was introduced into Hawaii in 1858. In the eastern United States this is an attractive hothouse plant but in Hawaii it has taken over thousands of acres of productive land. The myna, with its omnivorous habits, eats the seeds, which pass through the bird undamaged and take root wherever they drop. As in the control of armyworms, a parasitic insect control of lantana has been introduced which has checked the spread of the plant and even exterminated it in some areas. However, the Chinese turtle dove, Streptopelia chinensis, well-established from early days, probably had an equal share in spreading lantana, so that the myna cannot be entirely blamed.

The local newspapers in Hawaii often

have notes of interest about the birds, especially mynas. For every adverse comment there are at least two or three in favor. One, evidently from an oldtimer, gives a picture of Hawaii in pre-myna days. "Before this bird was brought here, each year an army of caterpillars marched from the mountains to the sea, eating every green thing on the ground. They were so thick on the ground that every step taken left your footprint and when these same turned into moths they filled every room with the dust from their wings, turning out all humans."

How shall we draw a balance?

There are so many factors of which we know too little and the most dangerous are the ones unseen. We shall never be sure but one thing is certain, the introduction of exotics anywhere is extremely hazardous.

#### Report on Eagle Bill

The Committee on Merchant Marine and Fisheries of the U.S. House of Representatives has submitted an adverse report (Report No. 1198) on H. R. 1870, which would extend protection to the bald eagle in Alaska.

The Committee concludes that "the bounty on the bald eagle in Alaska is unjustified, does not protect species of fish and wildlife having economic significance and its continuance will seriously endanger the existence of this living national symbol." The Committee adds, however, that H. R. 1870 is being given an adverse report because the authority to accomplish its

objectives is already vested in the Secretary of the Interior under terms of the Alaska Game Law of 1945.

The Committee recommends that the Territorial Legislature repeal the bounty, that the Fish and Wildlife Service take prompt steps to determine the current status of the bald eagle in Alaska, and that the Secretary of the Interior, together with the Alaska Game Commission, take early action "to adopt and enforce adequate regulations for the protection of the bald eagle in Alaska to the fullest extent necessary."

#### **Tropical Nature Seminar**

Members of the National Audubon Society who may be visiting in the Miami area this season to take the Audubon Wildlife Tours are invited to be guests of the Tropical Audubon Society at a session of the Tropical Nature Course, a series of weekly seminars that are being sponsored by that Society and the University of Miami.

The first seminar, February 20, is on tropical birdlife, and the series closes May 25 with

the subject of insects and other invertebrates. Local residents pay a registration fee for the course which is designed as an introduction to south Florida's unique plant and animal life. Out-of-towners may arrange to be guests at single sessions by contacting Kenneth Close, 1242 S. W. 12th Avenue, Miami.

Nature seminars are recommended as excellent community service projects for local Audubon Societies.

## The President

By John H. Baker



### reports to you

President of the National Audubon Society

#### Justice in Key West

ONSERVATION history was written in Key West, Florida, December 6 when the two men who shot white ibises at the Duck Rock Sanctuary in Augustone assaulting our warden, Henry Bennett - were convicted by a jury in criminal court. Forty-six years ago, Audubon Warden Guy Bradley, who was guarding a rookery near Cape Sable, was murdered and his assailant freed by a jury in Key West. Now a jury in that same city has found two men guilty of the charge of illegal possession of non-game birds, and one of them guilty of assault and battery. Each was sentenced to a fine of \$100 and to six months in jail; the latter suspended pending good behavior; and one of them to an additional six months in jail, suspended pending good behavior. No longer can it be said that a jury in Key West will not convict violators of the wildlife protective code.

A great deal of credit goes to Attorney Allen B. Cleare, Jr., who prosecuted the case for the State. Game Management Agent Wolfley of the Fish and Wildlife Service was most helpful as an advisor. Warden Bennett was the State's principal witness. Many members of the Monroe County and Tropical Audubon Societies attended the trial.

When the judge read the charges to the jury, he discovered that the assault and battery information was dated 1940; through an error the stenographer had used an old form and had failed to charge the date. The judge dismissed the charge. The prosecuting attorney was very angry because the defense attorney refused to allow

him to correct the date. He therefore again took sworn testimony, had a new warrant sworn out and served on the defendant while still in the courtroom. The judge and others concerned conferred and the defense agreed to change the plea on assault and battery to guilty, provided the sentence would be suspended.

At a rough estimate, the cost of the fines, court proceedings and defense will probably be not less than some \$1500, and, in addition, one of those convicted has a year in jail hanging over his head, and the other six months. The outcome of this trial reflects the change that has taken place in public opinion in Monroe County, Florida, with regard to wildlife protection and conservation of natural resources. As of today, the great majority of residents of south Florida are conservationists and support the protective activities of the federal and state agencies and of private organizations, such as your Society.

#### **Audubon Citation**

For their decision to spend a considerable sum to avoid disturbing wintering whooping cranes, the Continental Oil and Western Natural Gas companies received a citation of merit from the Society at the annual dinner November 13.

In presenting the award to Mr. James J. Cosgrove, chairman of the board of the Continental Oil Company, representing both companies, your president said that this is the first honor for service to conservation that the Society has awarded to a commercial organization, and is in recognition of a recent specific action.

He said that the two companies, acting within their rights under terms of lease, had wanted to build a loading dock on the edge of the whooping cranes' chosen winter habitat, with pipeline and road crossing to it from the other side of the Aransas National Wildlife Refuge in Texas; that after receiving the advice of the Fish and Wildlife Service and the Society, the companies had fortunately decided to build the dock on the opposite side of the peninsula, miles from the cranes' wintering habitat, even though this would involve a substantial increase in expenditure.

"It is extremely heartening to the Society," your president said, "that in this instance the natural desire to market oil and gas in the most economical manner has been tempered with genuine concern for the preservation of a magnificent bird that is fighting for survival. Any serious disturbance to the cranes' habitat at this time might swing the pendulum toward extinction.

Continued on Page 50

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John H. Baker (right) presenting a citation of merit from the National Audubon Society to James J. Cosgrove, chairman of the board of the Continental Oil Company, Oscar L. Chapman (left), Secretary of the Interior, smiles his approval.



#### By Harry W. Higman and Earl J. Larrison

7 HEN I was a very small boy I read much about birds and beasts in fairy stories and fables. I found that the animals were rated good or bad, the bad ones being especially bad, and the good ones unbelievably good. The bad ones played despicable tricks upon the good wild creatures. In these stories the fox was always cunning and unscrupulous, the wolf hungry and mean, the jackal low and treacherous. As for that archer, the sparrow who confessed to killing Cock Robin, he was so entirely set apart from the realm of good citizens in my juvenile mind that I never passed a sparrow in a vacant lot without recalling the miserable crime of its ancestor.

Many of us change such opinions as we grow older, but I am amazed at the extent that these prejudices still hold good. Most wildlife still wears a tag which expresses the popular opinion: the eagle is regarded as a child stealer in spite of the fact that a friend of mine, who has for fifteen years investigated such charges, has never been able to substantiate a claim of child injury. The wren is considered a confiding and altogether sweet bird, although it is often extremely quarrelsome and domineering and has been known to pierce the eggs of its neighbors with its bill when nesting competition is too severe. The hawks, even those which are of much value in the elimination of rodents, are "vermin," the name given to mammals difficult to control, and deserving of extermination. The owl is a murderer while the squirrels, frequent nest robbers, are highly regarded. The coyote, an inveterate mouser, receives no credit. In the marsh the single pair of kingfishers which sometimes appears is hated by sportsmen, who would welcome their elimination. Wildlife is classed everywhere in an entirely arbitrary and often unfair manner.

Predation in the marsh and elsewhere will never cease. The manner in which it is practiced does much to bring about the prevalent opinion that an animal is all good The obvious killer
is not always
the guilty one

Who Killed Cock

or all bad. Much predation goes on quietly in the dark or far from human habitations or under conditions which people seldom see. Sometimes nests are raided and the young killed, without the knowledge of nearby residents. Eggs are taken from the henhouse by animals so clever that only the diminishing number indicates that theft is going on. Young chickens and even suckling pigs can be removed without disturbance, and often the owner has no idea of exactly when or how the theft occurred. When finally discovered, there can be no definite placing of blame but only a vague idea that a coyote, fox, hawk, or dog is responsible for the destruction.

There is another type of predation which immediately makes itself known, and as quickly brings about the demand for the elimination of the offender. I refer to the

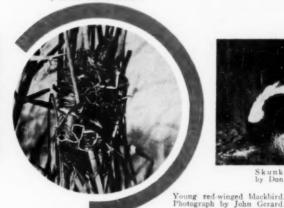
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Marso naws, Photograpo



Mink. Photograph by Mas



Skunk, Photogra by Don Wooldride

## Robin?



Red fox. Photograph by James S. L. Jacobs.



Common crow, Phy Maslowski and

appearance of the raiding "hen-hawk" which boldly enters the hen yard and then flies away with its victim while the rest of the flock sets up a squawking, which brings the poultry owner out to watch the tragedy. There is the wandering otter which stops at the farm pond and scoops up a fish while the women of the house wish that John were there with his gun. Then there are visits of raccoons which show little fear and impudently take their prey when it pleases them. The animal may never again appear on the scene, the total loss from this "showy" predation may be inconsiderable, but from then on the offending creatures and their distant relatives are marked, and unseen losses invariably charged to them. The destruction may be the result of the predation of other animals, hidden and unsuspected but constantly present in the area in large numbers. Predation is one field in which it certainly does not pay to advertise.

In our marsh hotel the mallards bring off broods of young varying in numbers from three to fourteen. People who regularly canoe learn to recognize some of the broods by their location, size, and the actions of the hens. The canoeists watch with concern the shrinkage in the numbers of the ducklings. Day by day the losses continue until the broods of twelve are reduced to perhaps five or six, and the hen which began with three will be swimming with one lone chick trailing her. At long intervals a mink will be seen taking a bird or feeding on one in late evening. The result is that the mink is held responsible for all the duck losses. When it is mentioned it is usually referred to as that killer.

Now the mink, which is a member of the weasel family, is a killer, which under certain conditions may be chiefly responsible for the mortality among young waterfowl. But in our marsh I am quite sure that this showy predator is far outclassed in destruction by another mammal which does no advertising but which is present in large numbers and, as baseball slang has it, is always pitching. I refer to the brown or Norway rat. The presence of sanitary fills in the district has attracted hordes of them, and although they are trapped and poisoned continually they have a cunning and adaptability which enables them to exist in unbelievably large numbers. I have seen them just before dark as they ran about the marsh margins, on the prowl for nests, young, food dropped by visitors, sickly or dead fish, or anything of food value. I have watched them swim short distances as they cut across an inlet. I have heard that in many places they climb about in trees. They have been responsible for the destruction and total elimination of many ground-nesting birds.

The mink which I have watched for many years, and which I am quite sure is locally limited to perhaps a dozen pairs, is charged with the destruction of the young ducks, while hundreds of brown rats, persistent destroyers and hunters of eggs and young birds, are entirely overlooked as predators, though they are feared and hunted as possible carriers of disease. This attitude toward the mink is held in spite of the fact that it is a hunter of rodents as well as of birds. It probably devotes

much of its time locally to the destruction of rats, which are easily taken when young and which can always be found in the area. There is even reason to believe that the destruction of rats by mink in the area might possibly assist in the protection of mallards, even though the mink is known to take them.

In my years of marsh observation I have seen few cases of predation or apparent predation which were clear and definite enough to justify immediate action. For example, the crows come to the marsh each spring, and knowing their sharpness and ability to take advantage of all food opportunities. I thought for some time that the birds annually made a practice of raiding the nests of the tule wrens, the redwings, and the flycatchers. One day I saw a crow carrying a young tule wren. This isolated case was my only evidence, but I could see no other reason for their activity at that time of year. Then I noticed that there was a small but constant mortality among the spawning carp. I saw some crows feeding on one of the carcasses. Never again did I witness further predation on the young marsh birds and so, in spite of many regular visits, I am now uncertain whether there is regular predation on the young of the small birds, whether the crows are attracted by the dead carp, or whether some other kind of food brings them.

Such experience has taught me, as I think it has taught all unprejudiced observers, that too-hasty action has no place in wild-life management, and that all possible information about any creature's habits must be collected and weighed before any control is considered necessary and decided upon.

Another case involved the harbor seal on the Pacific Coast, an animal which both the commercial and sports fishermen consider a great destroyer of salmon. A few men who had spent their lives studying such situations were not so sure that the seals were as guilty as charged. One of them deplored the fact when the state finally put a considerable bounty on harbor seals. When I remarked that there seemed to be plenty of evidence that the seals took salmon, he agreed, adding that the salmon Continued on Page 41



Pink lady slipper photographed by C. Huber Watson.

Illustrated with two full color plates in each of our 1952 issues, this is an introduction to a series of articles about

# YOUR Wildflower GARDEN



Black swallow-tail butterfly on butterfly weed. Photograph by Don Wooldridge.



New England aster photographed by Earl Brooks,

#### By John K. Terres

AS OUR cities and villages grow, and we change from a rural to a suburban or a city way of life, we are in danger of losing some of our most cherished possessions.

Many of us remember the woodland where, only a few years ago, we came each spring to find the first spring wildflowers—the lovely blue hepatica and pure white bloodroot. When February snow still lay upon the ground, we looked in a moist ra-

vine of this wooded plot for the first green spears of skunk cabbage, and, later, for the jack-in-the-pulpit and long-stemmed purple violets that grew at the feet of big beech and maple trees near the edge of an open marsh.

The green woodland is gone now, with the rich scent of leaf mold and pink arbutus that bloomed under the brown leaves of the hillside. A crew of men felled the trees, and a bulldozer ripped out the stumps and leveled the ground. Row upon row of white (Pictured on these pages are two of the 50 subjects in full color that are reproduced in the set of Wildflower Cards recently issued by the National Audubon Society.

Jack in the pulpits grow in the woods near the march





houses and small rectangular plots of green grass blot out all except the memories of a woodland that we once fiercely claimed for our own.

How many times this has happened in America we have no way of knowing, but the loss of native wildflowers, of bird and other animal habitats, to expanding real estate projects has been great. Many times, had we known about it in advance, we might have gotten permission of the land development company to move in ahead of the bulldozers and transplant some of those threatened wildflowers to our yards and gardens. To do so, we should know something about their habitat requirements,

their need for either sun or shade, moisture or dryness, an acid, alkaline or neutral soil.

With this issue of Audubon Magazine, we not only begin the reproduction of 12 wild-flower paintings by Lee Adams, in full color in our 1952 issues, but we introduce a series of illustrated articles that will tell you about the seasonal blooming of wildflowers, their culture, and their conservation. We hope that you enjoy them and that you will learn about some of our rare and endangered kinds of wildflowers and of ways to protect them. We also hope that from our article series, you may be inspired to help preserve some favored habitat where wildflowers still flourish in your area.

#### ← JACK-IN-THE-PULPIT

The "jack" of the well-known jack-in-thepulpit plant is the club-shaped extension of the stem. It bears the petal-less male and female flowers.

The hood over the "preacher" is lined with shades of purple, brown, or green. The hood, which is not a petal, is the outside cover of the flower bud and is called the spathe. The ripe fruits, which in autumn. form at the base of the jack, are a brilliant red. American Indians boiled these fruits and are them.

The jack-in-the-pulpit, with wild calla, skunk cabbage, golden-club, and others, belongs to the Arum Family. All of the arums, except wild calla, store food in their plant bases which they draw upon in early spring before the leaves unfold.

#### MARSH MARIGOLD

A dweller in the wet marsh, this plant has more than 25 common names. People use the young leaves as greens and pickle the young flower buds which has caused this wildflower to become scarce in some areas where it was formerly common.

The bright yellow flowers of marsh marigold resemble those of the buttercups to which it is related. Both plants belong to the Crowfoot Family, but the plant leaves of most buttercups are finely divided; those of marsh marigold are either entire or only slightly toothed. The flower petals of most of the buttercups are true petals, but the golden ones of marsh marigold are not flower petals, but sepals, that outer series of floral leaves (the calyx) which, in most flowers, is green.



While February snows still linger, we look for the green spears of skunk cabbage. Photograph by Henry H. Graham.





# Green Thumb

Edwin Mason combines his interest in living things with an art for growing them.

#### By Adele Erisman

YOU drive south from Northampton, Massachusetts, about three miles on Route 10, then turn off and follow the sanctuary signs up country roads a couple of miles. You come finally upon a pretty white farmhouse under big maples—the headquarters of the Arcadia Sanctuary.

Fairly in the shadow of Mt. Tom, on the great curve of the Connecticut River ox bow, this 200-acre property was deeded in 1944 by the Chaffee family to the Massachusetts Audubon Society in memory of Robert Searle Chaffee. The chances are you'll be greeted at the sanctuary head-quarters at once by an agile, twinkle-eyed man wearing an authentic scotch plaid

Mason congratulates a youthful helper for good work done in wildlife conservation. Photograph by Mary S. Shaub.

> Aerial view of a part of Arcadia Wildlife Sanctuary. Photograph by George Edge.

beret pulled well down over his coppercolored hair. He will introduce himself, with a slight British accent, as Arcadia's superintendent, Ed Mason.

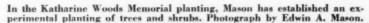
The first thing we did on my arrival was set out along the three-and-a-half miles of labeled trails. While admiring things like a bank of waving ostrich fern at the feet of magnificent shagbark hickories, and a mass of pink ladyslipper under gray birches, I learned that Mason had been director of the sanctuary ever since the Massachusetts Audubon Society acquired it eight years ago. At that time the property provided very little food or cover for wildlife, aside from a few white pines, a bush or two of winterberry, Ilex verticillata, and some Virginia creeper.

There was one encouraging sign that Mason was quick to note. Under the eaves of the barn he found the remains of some old cliff swallow nests well hidden by the several pines that had grown up in front of them. Mason had the trees removed and the following summer cliff swallows re-

turned to Arcadia, which has had a small thriving colony ever since.

The visitor today sees the results of Mason's work everywhere. He has put up 52 birdhouses, 12 of which are occupied by wood ducks, on the part of the property that is a marsh. In addition to songbird occupants, some of the birdhouses have attracted nesting screech owls and sparrow hawks.

Trailing arbutus, trilliums, cardinal flowers and blue lobelias are among the wild-flowers now established by Mason along the trails. A number of tree species thrive that







In summer, Mason conducts a day camp for children. Photograph by Edwin A. Mason.

were not here before. I saw four species of apple trees, three kinds of hawthorns, and mountain ash, hackberry, red pine, black spruce, European larch and lots more.

Perhaps Mason's outstanding contribution to Arcadia Sanctuary has been his experimental work with wildlife food plants. More than a hundred species of these have been introduced and are now being tested to determine their ability to survive in competition with native plants, to endure the Massachusetts climate and, with grasses and legumes, to test their ability to set seeds before frost and provide winter wildlife food. Switch grass, Canada tick trefoil, birdsfoot trefoil and 11 species of lespedeza are in this group.

Mason has created an improvement cutting around the water's edge where, by thinning out the dense growth, he has made room for extensive plantings of silky and red osier dogwood which now fruit abundantly. In the beautifully designed Katharine Woods memorial planting around the sanctuary headquarters, and in back of it on near-by trails, Mason has a large collection of viburnums and golden St.-John'swort, bearberry, Manchurian cotoneaster, creeping shad, Japanese prickly rose, bladder senna, and four species of Russian olive.

At one edge of the memorial planting he has built a lovely pool to provide bathing and drinking water for small birds. A recent complication developed when Mason caught a large bullfrog preying on the small birds. He transported the frog to a bigger water area where its prey would be more normal and more varied.

In addition to all the work that this planting program involves, Mason personally greets many of the 10,000 yearly visitors to Arcadia, and keeps up his work as coordinator for a number of bird-banding studies, a job that is very close to his heart. He had banded more than 4,000 birds at Arcadia Sanctuary up to the end of December, 1950. Of 52 recoveries, some interesting ones included wood ducks recorded from the Carolinas, Georgia and Florida, black ducks from New Jersey and evening grosbeaks and black ducks from the Province of Quebec.

After I had toured the trails and garden with Mason, we settled down in the comfortable living room at headquarters. I wanted to learn more about all the things we'd been seeing and talking about. Mason had mentioned his correspondence, extending over many years, with the late Aldo Leopold, whom he admired greatly. I asked how this correspondence had come about since they had never met. I learned that it had resulted from a letter Leopold wrote Mason, praising his report on protocalliphora parasitism that had appeared in The Journal of Wildlife Management. Mason thanked Leopold and made a typical reply. He said that he wasn't satisfied with the protocalliphora research that had extended over 10 years; the findings still seemed inconclusive and simply opened up new avenues for study. Leopold liked that answer and from there on they wrote about many things. I asked Mason what had resulted from the correspondence. thought for a minute, then replied simply:

"I grew because of it."

If all bird sanctuaries reflect the interests and personalities of the men who run them, as I think they must, then Arcadia is an expression of Mason's constant growth as well as his scientific spirit, his "green thumbs" and his philosophy. Here is a genuine, not a copybook, ecologist. To him a bird in a tree is a rather meaningless object unless related to the world around it and to the specific environment upon which it depends.

I asked more about the experimental plantings I had just seen. They seemed unusually extensive and important. Much of the planting information perpetuated in all kinds of publications could be improved and augmented by research of the kind I

had seen here.

It turned out that Mason works closely with the Soil Conservation Service in plant testing. He feels their program can be one of the best tools we have in wildlife management.

I had noticed a hedge of multiflora rose in the sanctuary. I asked the superintendent if he thought the value of this shrub to wildlife had been overemphasized. "No," he replied, "14 pheasants fed on its fruits at Arcadia last winter, and song sparrows nested in it."

I had noticed an extensive planting of viburnums. How many were there in the sanctuary?

Here Mason turned to what was obviously a highly efficient card file and came up with the answer in a minute.

"I didn't know we had that many vi-

burnums-12 species!"

"Which one has done best?" I asked.
"I'd say pretty surely Viburnum dentatum so far. It's fruited most abundantly

and has overcome the competition of grass

and weeds."

Born in Nottingham, England, Mason's father had a printing business there but wanted to be a farmer. So when Ed finished school at 15 he was sent to a farm owned by friends to learn all he could. He lived there for six years and loved it, but his father died before the family could do anything about a farm of their own. Then they tried to sell farm produce in Nottingham but Ed wasn't cut out to be a merchant. The next move was to the United States

Mason (right) bands a red-tailed hawk held by Dr. B. M. Shaub. Photograph by Mary S. Shaub.



where they settled in Groton, Massachusetts

Ed's outdoor interests became known to William P. Wharton who gave him his first job which lasted 18 years and gave Mason a variety of experiences. He acted as secretary, farm manager and forester for Mr. Wharton. They also ran one of the oldest bird-banding stations in the country and in the winters they went to Somerville, South Carolina, and carried on banding work there.

One of the interesting results of that work was their discovery that birds return to their wintering grounds with the same fidelity as to their summering grounds. It was in South Carolina that Mason met many pioneers in wildlife work. He remembers, with particular affection, T. Gilbert Pearson, who stayed with Wharton there. Pearson was executive director of the National Audubon Society in its formative years.

The Wharton period also included three summers' work with some students of the University of New Hampshire summer school in making banding studies at the Isle of Shoals herring gull colony off Portsmouth. There they made the first large-scale study in the use of color bands to learn about the distribution and dispersal of birds. They proved that young herring gulls wander northward before their first migration south, and that their longest migration, made during their first year, shortens with succeeding years. Mason thinks this shortened migration is caused by their need to hold nesting territory.

During World War II, Mason left Mr. Wharton to teach third grade at the Landon School for Boys in Washington, D. C., getting further background for his later work, so much of which would be directed to children.

"I was hired after a short interview," Mason said.

He leaned back in his chair, puffed on his pipe, and smiled, "I had done no teaching and, as I was leaving, the man who had hired me asked, 'By the way, you are not overburdened with academic degrees, are you?' I assured him I was not."

"You didn't drop your interest in wild-

life during the teaching interval?" I asked.

"No, I always do what I can. People were being invited to cut dead trees in Rock Creek Park. I wrote to a Washington, D. C., newspaper and the cutting was stopped in time to save some trees for hole-dwelling animals."

On my brief previous visit in the fall I remembered having heard guns in the distance and I realized that there was a 130-acre water and marsh area at Arcadia that had to be patrolled during the waterfowl season.

"Yes, 200 ducks were resting there last November. I hate the hunting season. Don't get any sleep."

I wanted to know if he had ever had to prosecute. Mason replied that he usually gives a warning and that suffices but that he did follow through once when he had a strong case.

All freshman biology classes from Smith College, Northampton, visit Arcadia. Students do research there for their degrees. Mason helped one student with a master's thesis that concerned avian parasites; another dealt with ecology. Mason also has summer day camps, with a dozen students between 9 and 12 years old in each of three sessions, but the project is incomplete. It is the hope of the Massachusetts Audubon Society that Mason will have more to work with when they can replace the present barn buildings with a building adequate for a conservation education center and natural history exhibits.

Since so many children come to the sanctuary I wanted to know if any new teaching methods had been developed.

"Not new ones particularly. We find it very effective to let the youngsters touch a live bird that has been caught in a banding trap. After showing them how it's banded and telling them why, we say it's time to let the bird go. We let one of them hold his hand out, making sure he relaxes and doesn't tend to close his fingers, then we lay the bird on its back and let the child release it. That feeling of holding an alive, unharmed bird is an experience he never forgets.

"Of course, we try to get them to ask

questions. We always give them clues ahead of a field trip to let them know what to look for. In the fall we may concentrate on nuts and fruits and small animals storing food for the winter.

"We feel successful in our teaching if we make each youngster aware that by looking hard he can see 10 times as much and have 10 times as much fun. If we do that we

have given him a tool for living no matter what field he may go into."

I had listened to Mason attentively—for here was a man of scientific spirit telling people to see, to observe closely, to use their eyes, their minds and their hands. If there is a better message than this, both for children and adults interested in the out-ofdoors, it would be hard to find.

#### WHO KILLED COCK ROBIN?

Continued from Page 32

had many other enemies, notably dogfish. What he would like to know, he declared, was what the harbor seals fed on during the months when salmon were not numerous on the coast. When I asked the reason for his curiosity he said that if, during that period, the seals fed on dogfish and on other predators of the salmon, it might be that the good they did by reducing these other predators was far greater than the damage caused by direct attacks on the salmon. At any rate, he considered this factor the crux of the whole problem and said that it was possible that the action taken was not only a financial waste but also, by relieving the pressure on the other important salmon predators, was causing a net loss in the salmon crop. He thought that further investigation was necessary to justify the continuance of the bounty on the harbor seal. Thus what looks like a problem of simple predation becomes a complicated and doubtful affair.

There is a great advantage in confining much attention to one small marsh. It lies close to my home. I can see the workings of the whole, which is an advantage not

found in a large area.

If, in my visits, I think much of predation, it is because I cannot escape it. It is always about me. I paddle my canoe through a community where predation is the rule and where all living things are affected by it. The balance of nature of which we hear so much, means, crudely defined, that all forms of community life have a tendency to adjust themselves in an interlocking and smooth-running organization.

In this community, as in most others, many members eat, or are eaten by other members, or both. The individuals perish but the species and community move on. The process is constant: a fly, of a sort which resembles a bee, moves over the surface of a lily pad and lunches on small insects which dot the leaf. Sated, it departs. There is the soft movement of wings, the flash of a small bird, and a barn swallow neatly annexes the fly. Tomorrow some hawk may take the swallow. Such is the present pattern of marsh life. Almost certainly it has been the pattern for centuries. Interference with it may have strange consequences. Spread the new insect killers in the marsh and all may be well if it is done carefully. but improper methods may involve the elimination of the useful as well as the injurious, the removal of the insect food of the birds and their consequent death or departure, the elimination of insects necessary to effect pollination, and a consequent shrinkage in the productiveness of the area, and in the number of birds and mammals which are able to maintain themselves.

Natural communities appear to have a quiet efficient way of operating. The relationships are those of the ages. It would seem that they should be interfered with as little as possible and that any attempts to control future killers of Cock Robin should be made only after changes are proved to be absolutely necessary and there is certainty that changes proposed will not be accompanied by undesirable repercussions.

Editor's Note: These are excerpts from Chapter XXIII of "Union Bay," by Harry W. Higman and Earl J. Larrison, copyright 1951, published by the University of Washington Press, Seattle, \$4.00. Printed by kind permission of the publishers.

In this and succeeding issues we bring you a test of your ability to identify birds from photographs.



Quiz

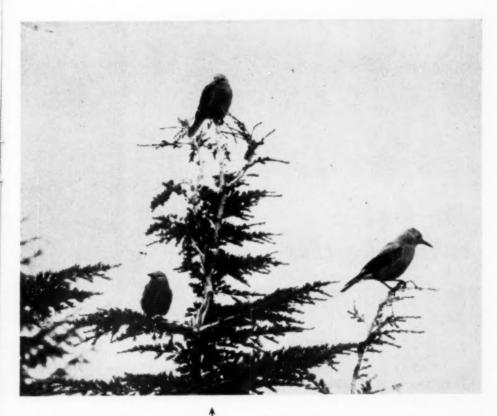
By Hugo H. Schroder

All photographs by the author.

The author, a well-known bird photographer, asks about each picture, "What bird is it?"

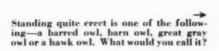
This homebody is inspecting the household arrangements. Is it a red-eyed towhee, wood thrush, white-eyed towhee or a bobolink?





These birds are three of a kind. Would you say they are Canada jays, pinon jays, Clark's nuterackers or Oregon jays?

FOR ANSWERS TO PHOTO QUIZ SEE PAGE 65.







# The Duck called "Poacher"



Off they went until they became only dots against the sky. Photograph of baldpates by Paul J. Fair.

#### By Charles H. Southwick

OFF they went, the three of them hurtling and twisting through the air, until they became only dots against the sky. At times they appeared to clash together, then again they would separate as one darted upward with head held high and back arched. We could see that one drake was definitely the pursuer; the other drake and the hen, the pursued.

They seemed a mile away when the single drake turned. Back he came on rapid wings. Looming larger by the moment, the drake baldpate was again well within view. A hundred yards from the pothole, he set his wings, lifted his head, and sailed in. We could see the front alula feathers working like flaps—a slight movement of these quills and his entire body responded by shooting upward or tilting downward as he wished. Quickly he dropped toward the pothole, and skidded into the water. With a wag of his tail, the baldpate again surveyed his pond from which he had driven the in-

The baldpate, or American widgeon, has at least 14 common names. Only one describes its habit of snatching food away from other ducks.

truders. Proud as a king he was, with a crown of white and a cloak of wine.

Somewhere, perhaps a half-mile distant in the surrounding Manitoba farmlands, was the hen of this drake. Now, in early June, she was laying eggs. Her nest, if we could have found it, would probably be poorly concealed. The hen chooses a slight hollow, often in sparse cover, in which to build her nest. First it is lined with grass and weed stems, then with her own down.

By the middle of June her clutch is complete with 10 or 11 cream-colored eggs. Here is a feast for a crow or a skunk and, quite frequently, the first nest is destroyed. If the nest falls to such a fate, the hen will renest and lay another clutch of eggs. This

second clutch is usually smaller than the first, but it is this capacity for second nesting that insures the perpetuity of these ducks.

While the hen is incubating, the drake vigorously guards the pothole which he established as territory at the beginning of the breeding season. Such a pothole is often just 50 or 100 feet across, and it is strongly defended against all others of his species. It was such a defense that we had seen when another pair of baldpates landed upon our drake's area. Quick was his reaction to drive them off. This territorial defense, however poetic and gallant it seems to us, has little significance to the hen and her nest. She is some distance away, entirely occupied with the real duties of nesting, incubating, and later, brood raising.

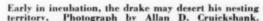
Sometime early in incubation the drake deserts his territory and joins bands of other males. In the twilight hours of late June, these groups of drakes may frequently be flushed from the marshes of the Manitoba countryside. Their appearance is still striking, but soon the summer molt will

reduce their handsome plumage to a mottled brown likeness of the female. At the height of this molt, as the primary wing feathers are gone, the birds will be flightless for two or three weeks. In this stage, the drakes have retired in larger groups to secluded areas of the marshes.

Thus is a sketch of the summer life of the drake. The story of real interest is that of the hen. A clutch completed by mid-June, and surviving endless hazards for the succeeding 24 or 25 days, will hatch in July. The ducklings are yellow and dark olivebrown with an indistinct eyeline and gray feet.

Several inborn reactions enable the newly-hatched birds to meet their world. At once they can walk. At once they peck at every grain and particle they see. By trial and error they learn which particles are food and which are not.

The hen and her ducklings have a language. Not a language in our sense of conveying thoughts, but a language of inherent sounds which cause definite responses in their fellows. Thus a constant peeping among the ducklings will keep them in a





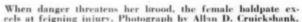


Canvasbacks are often victimized by the baldpate. Upon the canvasback's return to the surface with the roots of wild celery, the baldpate will pilfer them from this expert diver. Photograph by Paul J. Fair.

tight group. An occasional note from the hen will lead them through dense cover. When the hen perceives danger, her calls and actions will stimulate the brood to scatter and hide.

The hen baldpate excels in a mock display of injury. We approach a female with her brood, and watch her actions. She will often utter a guttural "qurrr, qurrr," and flutter away from the brood with a wing dragging. So vigorous is her feigning of injury, that she may come directly toward us and struggle about us in an arc of 10 or 15 feet. The brood, during this performance, has disappeared.

Early, if not immediately, in the life of the brood, they will make a trek toward water. Across fields or over dusty roads the female will lead the ducklings. Her route to water is not always direct. Instead, she may follow a path or road along its windings. An overland trip of a quarter-mile or more before the brood reaches water is not uncommon. The farther it must travel and the longer it is abroad, the slimmer are its chances of survival. There are a dozen and one factors which can take the life of the





ducklings. A sly cat may lie in wait and take two. A Cooper's hawk may stoop for another. All of them may be destroyed by parching heat or violent downpours.

For those that reach the pothole, a haven of food and concealment is found. Here the ducklings swim and dabble among the aquatics as readily as they walked. The brood is most active in the early morning and late evening. The heat of the day is more generally spent in the cool reeds and sedges. Again the young ducklings snap at everything that comes their way-Mayfly larvae, water boatmen, whirligig beetles, and countless nymphs and naiads furnish the proper diet. As the birds grow into greater size and feathered plumage, they begin to eat more plant material. When adult, nearly 90 per cent of their diet is pondweeds, sedges, duckweeds, algae, smartweeds and coontail.

Within three weeks, the first feathers appear on their flanks. At the same time, the scapular feathers develop on their shoulders. As the days progress, feather growth spreads over the breast and back. During the sixth week, the last down disappears from their heads, and the juvenile plumage, except for patches of down remaining on the rump and wings, is complete. The birds will be flying before another two weeks pass.

The hen parts with the brood shortly after flight time. She, like the drake, will undergo a summer molt. Her loss of feathers is more gradual than that of the male, and her plumage pattern remains unchanged. The drake molts from his adult plumage into the "eclipse" plumage in which he closely resembles the female. In early autumn the male begins a complete molt from the female-like eclipse plumage to the adult plumage of winter.

The major breeding areas of the baldpate are the extensive prairie provinces of Canada. We may say that the breeding territory is from Nebraska north to the Yukon, and from Manitoba west to the Rockies. Myriads of sloughs and potholes throughout this area are the producers of the baldpates, as well as the mallards, pintails, canvasbacks, and other ducks. How many of these potholes dry up in July and August heat is a matter of speculation. During some years, a great many; in others a few; in all years, some. What happens to the broods of baldpates during a midsummer drouth, we do not know. A brood, even a very young one, undoubtedly has unusual ability to move cross country to other potholes. How far they can go, how much water they need, and how long they can exist on succulents alone, are three sides of the same question which no one, so far, can answer.

In early September, when the aspen parklands of Canada are touched with yellow, the baldpates are stirring for migration. Their flight south is early and unhurried with frequent stopping along the way. In Manitoba, many of them skip out ahead of the hunting season, and their numbers comprise only a small part of the game bag there.

Farther south, the season catches up with their leisurely flight, and they take their portion of gunning pressure. The appreciation of any bird is increased tenfold by the observation of it throughout the year. As aspects of its life history become better understood, each contact with the bird gains new significance. And an enjoyment of it is deepened with our new understanding of its struggle for life, and its ability everywhere to meet dangers that beset all wild creatures.

#### Alaska's Brown Bear Defended

The world's largest flesh-eating mammal, the Kodiak brown bear, is not going to be exterminated to make room for more cattle raising in Alaska as long as the Alaska Game Commission has anything to say about the matter. This is the gist of a statement made by Earl N. Ohmer, chairman of the Commission, in a letter to J. Hammond Brown, president of the Outdoor Writers Association of America, the Wildlife Management Institute reports.

small but beautiful white cedar bog, there are wild cranberries and the thread-leaved sundew, a plant that feeds upon the insects which become enmeshed in the hairs of its sticky stems.

Myrtle warblers, thrushes, robins, flickers, brown thrashers and other songbirds, which ordinarily migrate south, often winter in the protection of these Island Beach thickets. In summer, Carolina wrens, catbirds, towhees, yellow warblers, kingbirds, barn swallows, martins, red-winged blackbirds and others nest here, with mockingbirds and cardinals. In the fall, these low trees and thickets swarm with birds and I know of no other area in New Jersey where they may be so easily seen.

On Barnegat Bay to the west, and on the Atlantic Ocean to the east, loons, grebes, cormorants and thousands of Canada geese, brant, mergansers, scoters, golden-eyes and other ducks spend the winter. On the beaches, snowy owls come during their periodic winter migrations, and every winter one may see flocks of horned larks, Lapland longspurs and snow buntings feeding on the grass seeds that they find here so abundantly.

Scientists from the State Museum, Trenton, N. J., the Philadelphia Academy of Natural Sciences and the American Museum of Natural History, visit Island Beach to study its plants, birds and insects. Dr. John A. Small of Rutgers University, and professors of Princeton University have been bringing classes to Island Beach for many years.

What are the possibilities for the future use of Island Beach by keeping it as it is? Students from colleges, universities and grade schools would have unlimited opportunities here to see and study the way certain plants hold dunes and prevent their shifting; to learn the adaptations of plants to sand and ocean; to study the life histories of the ghost and the fiddler crabs; to unravel the mystery of the reverse migration of the great sulphur butterfly, and many other problems that have plagued the curiosity of man. Students might study the

migrations and life histories of commercially important fishes and other valuable seafood animals that spend a part or all of their lives off the New Jersey coast.

Island Beach could become a great outdoor museum for school children and adults of New Jersey and for those from all over the world who would like to see the plants and animals of a rare barrier beach, ocean and bay, struggling to survive. It is not inconceivable that men, working under the great pressures of modern city life, may come here to seek the wonders of this beach and end in a much greater discovery—that of finding themselves.

Island Beach is not yet open to the public. It is still privately owned by people who for the past 25 years have wisely protected and preserved its wonders and natural beauty. They and others are trying to get this land set aside as a national monument, but up to now this has not been accomplished, principally because of a lack of funds to buy the property.

We hope and believe that this last unspoiled barrier beach on our North Atlantic coast will not be sacrificed to make one more beach resort.

People throughout the United States helped save the redwood groves of California from destruction. Island Beach, within 100 miles of New York and Philadelphia, is no less unique. Can it be saved before it is too late?

"Time is running out on our opportunity to create Island Beach National Monument. I still hope that a way will be found to acquire the necessary lands. I fully appreciate your interest and efforts in this project. I know we shall have your wholehearted cooperation in every further effort to put this program across."—Oscar L. Chapman, Secretary of the Interior, at the Annual Dinner of the National Audubon Society, November 13, 1951.

## MYTH - INFORMATION

By Lewis Wayne Walker

(Many wildlife myths and legends, built up by our early settlers around certain kinds of American birds and other animals, persist from generation to generation. In the fifth of a series, a writer-naturalist tells the true story underlying some pet beliefs.—The Editors)

Number 5 in a series

#### Rattlesnake's Age Can Be Told By Its Rattles

Most laymen believe the persistent story that the age of a rattlesnake can be told by the number of segments or joints in the rattle. This is another snake fable, because the rattler adds a new segment to its string every time that it moults, or sheds its skin, and this may be at least three to four times a year.



#### THE PRESIDENT REPORTS TO YOU

Continued from Page 29

"We will hope," he added, "that the splendid example of good public relations and bona fide conservation interest on the part of the Continental Oil and Western Natural Gas companies may initiate a trend and stimulate comparable actions on the part of the officials of other corporations and interests engaged in the exploitation of natural resources."

#### **Cranes Move East**

You will recall that three years have passed since the Audubon Park Commission generously loaned to the Fish and Wildlife Service and your Society the wingcrippled whooping crane that had been in its possession for some six years, and was the only whooping crane in any zoo in the world. It was the Commission's desire to cooperate fully in the planned effort to add to the wild crane supply through bringing this bird together with another wing-crippled whooping crane donated by the Gothenburg, Nebraska, Rod and Gun Club, which had had it in captivity for some 12 years; and by eventually liberating, in the wild, young cranes that might have been successfully raised by the pair of captive adults. You are familiar with the story of three seasons of disappointment as regards nesting success, even though two eggs were laid in 1949, one young bird hatched in 1950 and one egg laid in 1951, all within the special enclosure on the natural marsh at the Aransas National Wildlife Refuge in Texas, where the wild birds winter.

When the Audubon Park Commission recently indicated that, in view of the circumstances, it would like to be given opportunity to demonstrate whether it could succeed, with the help of the adults, in raising young whooping cranes at its zoo, for later liberation in the wild, it was felt by the Fish and Wildlife Service and your Society that the request was a reasonable one, even though we both believe that it would be preferable to continue the breeding experiment under as natural habitat

conditions as possible, and that the chances of young cranes surviving, in the wild, after being raised in a zoo, are slight. It was felt by all that, whatever happened, the captive adults should stay together and so decision was made to offer to loan the male bird to the Commission for 10 months (until well after the end of the 1952 breeding season), as well as to return its female. This decision was, as you might expect, disheartening to the Refuge Manager, who had done so much to give the captives all possible aid and who had become very much attached to them.

While the incident caused considerable publicity in Texas and Louisiana papers, with expression of rival claims as to jurisdiction, and involvement of the issue of state's rights, all was in good humor!

The most important news about the whooping cranes is the fact that the wild birds again brought back from the North this fall five young of the year.

#### **Aid for Flamingos**

In 1951 Bob Allen, in carrying out his life-history studies of the American flamingo, visited Yucatan, Cuba, Haiti, the Dominican Republic and the Bahamas. He found some 15,000 flamingos, of which some

#### \* NATURE

#### RARE BIRD PROTECTION IS A CHALLENGE

by John Vosburgh

Reprinted from The Miami Herald November 18, 1951

One April day nearly half a century ago the late Dr. Frank Chapman, South Florida's nationally known ornithologist, was pushing through the swampy lowlands northeast of Lake Okeechobee when his eyes suddenly froze on a clump of cypress trees.

There in the branches preening their magnificent green, yellow, orange and red plumage, 8,000 were in the Bahamas and 4,000 in Yucatan. It is his feeling that prompt efforts should be made to further the conservation of the flamingo in the Bahamas and Yucatan, where the largest groups now nest. In 1951 very few young flamingos were raised, because the nests of the large group at Inagua, in the Bahamas, were drowned out twice by high water and the colony in Yucatan was right in the middle of the severe hurricane that swept last summer through Kingston, Jamaica, and Merida, Yucatan. For the coming breeding season, there has been renewal of the cooperative arrangements for the protection of the Yucatan birds by the family that owns the lands where the birds choose to nest. In order to obtain satisfactory results in the Bahamas, it was felt that there should be stimulated the organization of a local society which would assume responsibility for any necessary negotiations with the Colonial government, for the hiring and supervision of wardens and acquisition and maintenance of their equipment, and the financing of the program. This, we are happy to tell you, was accomplished in late November, with the invaluable assistance of Mr. Arthur S. Vernay. The Society for the Protection of the Flamingo in the Bahamas was then organized, with the Colonial Governor as Patron and with a distinguished board of 18 Founders, all but two of whom are year-round residents of the Bahamas and represent leading business interests of the colony.

As recently as 1940 there were some 10,-000 flamingos nesting on the southern tip of Andros Island, but, during the last few years, none has nested at that site. Yet the habitat, from a flamingo standpoint, has not been altered. There have been no real estate subdivisions, bulldozing, drainage or lumbering. The primary cause of the desertion was, apparently, buzzing of the nesting colony by airplane pilots, but the taking of young birds for food by the natives was also an important factor. It is our hope and that of the new Society that, with protection provided by competent wardens, the birds may return to this ancestral habitat; that they will increase in nesting numbers at Abaco and be free of any disturbance at Inagua; that they may return to other islands, such as the Exhumas and Rum Cay: that, in due course, they may be seen frequently by every tourist to, let alone resident of, the Bahamas. To gain that end, there is much to be done by the Society for the Protection of the Flamingo in the Bahamas, for the risk of total loss of the flamingos is currently great.

#### IN THE NEWS \* \*

were 13 of the nearly extinct Carolina parakeets, chattering briskly.

That was in 1904 and the Carolina parakeet has not been seen since by an ornithologist although other observers reported seeing the species as late as 1920.

America's only true parrot, once plentiful in Dade county and which ranged as far north as the Great Lakes, evidently became extinct during the first quarter of the century-killed off by bird trappers and wanton hunting practices.

Many of America's beautiful birds once faced a similar fate. But, thanks largely to the National Audubon Society, Florida's egrets, herons, ibis, terns, gulls and pelicans still soar above our woods and fields and add their grace and beauty to our seashore.

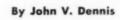
Florida enjoys the distinction of becoming one of the first states to pave the way for bird refuges when, in 1901, the legislature made it a misdemeanor to kill non-game birds.

Thus encouraged, Audubon workers set out to halt raids against a colony of brown pelicans on an island in Indian River. They ran into opposition but discovered the island was federally owned and appealed to President Theodore Roosevelt who immediately set the island aside as a bird refuge.

Audubon workers then set to work to find other government land containing rare species

Continued on Page 67





COMMON salt (sodium chloride), is necessary for a bird's general health and wellbeing. A deficiency will reduce growth and adversely affect reproduction. There seems to be a wide range in the salt requirements of different species, and the requirements seem to vary seasonally. The most pronounced craving for salt is found among some of the northern finches—evening grosbeak, purple finch, pine grosbeak, redpoll, pine siskin, red crossbill and white-winged crossbill. The wood pigeon of Europe is said to drink salt water to obtain it.

In the hope of learning more as to the salt requirements of northern finches, I wrote to Louise de Kiriline\* who has had years of experience in feeding and banding birds in northern Ontario. She told me of the great success she has had in attracting birds by the use of salt. Interestingly enough, it is not pure salt which seems to attract the birds, but salt that has penetrated into some other substance. A block of salt placed upon a cedar stump was not utilized, but purple finches ate tiny slivers

\* See her article, "Winter Birds at the Loghouse," Audubon Magazine, November-December 1949.



Give birds the proper foods and you will have a greater variety of them throughout the year.

Birds often consume salt when it is mixed with earth or snow. Photograph by Richard L. Weaver.





Bread, suet, wheat and buckwheat are good protein foods. Photograph of chickadees by Elizabeth Yoder.

of the stump which had been saturated with the salt. Birds often consume salt when it is mixed with earth or snow as in spots where dish water is thrown out. Through color banding, we have learned that individual birds do not need salt every day, but every two, three or more days. The demand for salt is greatest during the breeding season, as has been particularly noted in the case of purple finches and evening grosbeaks.

Mrs. de Kiriline agrees with me in believing that there is a mineral deficiency in the North which birds overcome not only through eating salt but grit, charcoal, ashes and substances saturated with dish water and even urine. This may be an alkaline deficiency, as she suggests, which is accentuated by a diet consisting largely of coniferous seeds, at least during the winter and into the breeding season.



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In most parts of the United States it is doubtful if much success can be had through attracting birds by the use of salt. Even in Massachusetts, during a winter when northern finches were unusually plentiful, I had no luck at all in getting birds to eat salt although I made it available in several different ways.

Nevertheless, I think there is a very real demand, even among our resident birds, for foods which contain a small amount of salt. Both peanut butter and bread, which rank high as favorites, contain enough salt for a bird's normal

requirements.

Proteins, as vitamins, have received much public attention, and foods for both humans and animals are often rated as to the amounts they contain. Proteins are essential in the repairing of broken-down tissues and the building of new tissues. Meat and eggs are basic sources, while fruits and vegetables have little

protein value.

Insect- and seed-eating birds certainly find enough proteins when their food supply is plentiful. But such birds as goldfinches, evening grosbeaks and purple finches, which at times subsist largely upon a vegetable diet, may suffer from a shortage of proteins. Perhaps this is why they feast so avidly upon sunflower seeds, a rich source of protein. Peanut products head the list of high-protein foods, so the peanut butter and peanut kernels which disappear so rapidly are filling a vital nutritional requirement. Hemp seed, another favorite food with many birds, is an excellent source of protein. Bread, suet, wheat and buckwheat are also good protein foods.

Fats and carbohydrates supply energy. Birds, living as they do at an accelerated pace, must require exceptional amounts. They supply their needs through eating grains, fruits, berries and seeds of various kinds. Some natural foods are much richer in energy-giving ingredients than others. Berries of tartarian honeysuckle, for instance, are very rich in carbohydrates, while the fruit of flowering dogwood contains a plentiful supply of fat.

As long as a good variety of food is available



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While favorite foods generally seem to be those having an abundance of nutritional elements, there are other factors which determine a bird's choice. Size, color and texture enter into the picture. Taste is probably of minor importance, for birds not only have a poor sense of taste but a poor sense of smell as well. Anyone with a bad head cold knows that, deprived of smell, food is almost tasteless. Dr. Nestler suggests that another factor may be involved. He writes me that "it is perhaps a sense of satisfaction and well-being, if not taste,"

Size and texture certainly limit the variety of food available to birds. Nuts are highly nutritious, but hard outer casings make it difficult or impossible to obtain the contents. Birds with strong bills can handle beechnuts and acorns. but most birds have to pass up such foods unless they can glean bits here and there made available by other animals or, as sometimes happens, they find nuts crushed by automobiles.

Uncracked corn and unshelled peanuts are useless to most birds. Blue jays, using their stout bills as hammers, can crack them open. In doing this they often let small particles drop which are then eaten by other birds. In the same way, birds with bills adapted for cracking seed between the upper and lower mandibles, can

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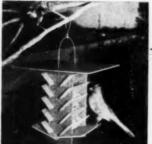
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readily open the husks of sunflower seeds and thereby make the contents available both to themselves and such gleaners as pine siskins, redpolls and mourning doves. It is amusing to watch the gleaners wait while evening grosbeaks or purple finches commence cracking open sunflower seeds.

Color is certainly an important factor with birds in their choice of foods. Experiments reported in the U.S. Department of Agriculture Yearbook tell of success in dyeing poison baits yellow or green so that birds would not eat them. Birds were least likely to take objects colored green. This is particularly interesting since in nature unripe fruits are generally green, and it would not be of advantage for either the bird or the plant to have the unripe fruits consumed. But as soon as the fruits have turned to such colors as red, purple and orange, they are acceptable to birds.

Finally, there is the unknown factor which makes certain foods particularly attractive to birds. It seems strange that some of the most popular natural bird foods are toxic to humans. Poison ivy berries rank with such favorites as the berries of red cedar and flowering dogwood. During a severe winter in Massachusetts I found that crows, juncos and flickers had almost consumed the local supply of poison sumac berries by late December. In Wisconsin poison sumac was found to be a staple food for pheasants and quail throughout the winter. The small decorative fruits of red pepper, so potent that contact against human skin is enough to cause severe irritation, are eagerly devoured by mockingbirds, as I have noted in Florida. Yet if a food is directly harmful to a bird, it will in most cases be avoided. Crotalaria spectabilis, a legume, is poisonous to bob-white quail. According to Dr. Nestler, some quail would rather starve than eat it. House sparrows refused to eat a doughnut dipped in arsenic according to the report of someone who was trying to get rid of them.

Of special interest is the avidity with which many birds take sweets. We all know of the hummingbirds' preferences in this connection. A single ruby-throat was reported to consume two teaspoonfuls of sugar daily as offered in liquid solution. Other birds, too, have been seen at hummingbird feeders. In California, the hooded oriole, Bullock's oriole, Audubon's oriole and song sparrow have been noted sipping sugared water from hummingbird feeders on several occasions. Sapsuckers show partiality for trees with sweet sap such as sugar maples and sweet gums.

There are numerous other birds, not capable of obtaining nectar from flowers or tapping trees for sap, which do occasionally find means of obtaining sweets. When sap flows from broken twigs and branches of the sugar maple during the spring, house finches and waxwings have been seen to utilize it. Audubon saw a hairy woodpecker tapping a sugar cane stalk in order to obtain the sweet juice within. I have seen pigeons pecking at discarded candy bars on sidewalks. And in Florida I noted a number of warblers and other birds coming to the sap of the sweet gum made available through the drillings of a yellow-bellied sapsucker. Most persistent sap drinkers were yellow-throated and myrtle warblers. The African honey guides are famous for their habit of leading humans to beehives in the expectation of obtaining a share of honey for their services.

Without having taste as a satisfactory explanation for this tendency for a "sweet tooth" among birds, we can only speculate that birds derive some sort of satisfaction from eating sweet foods.

For a highly successful feeding station we should offer foods that are both nutritious and especially favored by birds. No one food contains all the essential food elements, or is acceptable to all potential visitors. A combination of the time-honored foods is certain to meet most requirements. This combination may be varied to meet seasonal needs. More sunflower seeds are needed, for example, when there is an influx of northern finches. Fats and carbohydrates should be supplied more abundantly during very cold weather. Grit is a necessity when the ground is covered with snow. And during the breeding season essential minerals and vitamins are doubly important.

Through carefully planning our menu we can have birds the year around and in larger numbers and in greater variety than we thought possible. If you wish to offer a balanced diet for birds remember to supply the following items in your feeders:

Yellow corn for vitamin A and carbohydrates. Corn, proso millet, sorghum and wheat for carbohydrates.

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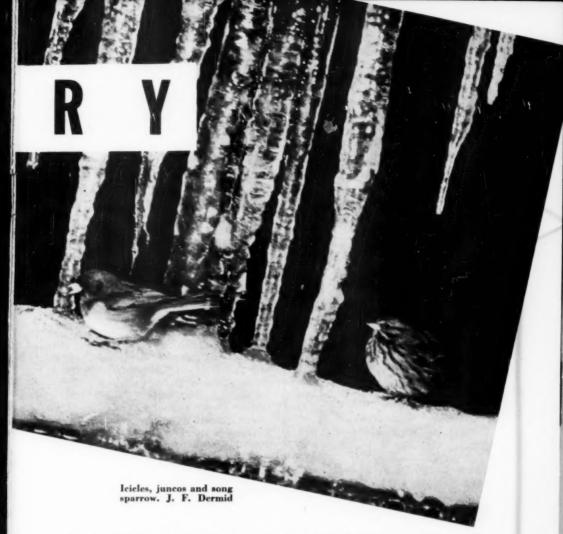


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Confusing situation: One groundhog sees other's shadow. C. H. Watson



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# ook Notes

By Monica de la Salle

We have departed from custom in this issue to print a review by a guest reviewer, Alexander Sprint, Jr., Audubon Screen Tour Lecturer and leader of Audubon Wildlife Tours. His lead review of the "Birds of Newfoundland" is followed by those of the librarian at Audubon House, Mrs. de la Salle.—The Editors.

#### THE BIRDS OF NEWFOUNDLAND

By Harold S. Peters and Thomas D. Burleigh, Department of Natural Resources, Province of Newfoundland, St. John's, 1951. 9 x 61/2 in., 431 pp. Illus. with 32 full color plates and 40 black-and-white drawings by Roger Tory Peterson. Index and bibliography. \$6.00. Houghton Mifflin Company, Boston.

Now and then one hears of "blind spots" in the ornithological coverage of North America. Hitherto, Newfoundland might well have been so characterized. Geographically and otherwise, it has been, and still is, remote in most Americans' minds and comparatively few have visited it. Now it has definitely emerged from any real, or supposed obscurity, through the efforts of two assiduous ornithologists. Any bird student may now become familiar with the avian population of that far land, from his or her own library chair. Messrs. Peters and Burleigh have done a service to North American ornithology which is outstanding.

Both authors have been long associated with the U.S. Fish and Wildlife Service and have worked long and diligently in the North. This splendid volume is a lasting monument to their efforts.

The book treats 227 forms of birdlife. Plumage descriptions are brief but concise; field marks, voice, nest and eggs and ranges (which are considerably compressed) precede accounts of habits and behavior. There is a preface, introduction and history of ornithology in Newfoundland. In the historical discussions it is surprising to learn that the first mention of birds in Newfoundland occurred in the year 1007!

Chapters on The Study of Birds in Nature, Geographical Distribution, Conservation and Protection, and Systematic Classification are informative and interestingly presented. There is also a list of 24 species originally described from Newfoundland. Unfortunately, there is no translation of scientific names, an omission characteristic of the vast majority of bird books, and one which this reviewer has often deplored.

The color plates by Roger Tory Peterson are. to this reviewer, some of the best which that accomplished artist-ornithologist has ever produced. There are 32 color plates illustrative of 153 species, and 40 black and white drawings, bringing to 175 the species depicted. Certainly, these plates form a highly attractive adjunct to an informative and valuable volume.

ALEXANDER SPRUNT, IR.

#### THIS FASCINATING ANIMAL WORLD

By Alan Devoe, McGraw-Hill, New York, 1951. 81/4 x 53/4 in., 303 pp. Illus. Indexed.

Fascinating indeed is this book of questions and answers about the strange and curious facts of animal life. In each chapter, whether devoted to mammals, birds, insects, reptiles, or fishes, information will be found on many a "believe it or not" aspect of natural history, as well as folklore theories.

#### THE HISTORY OF AMERICAN ORNI-THOLOGY BEFORE AUDUBON

By Elsa Guerdrum Allen, American Philosophical Society, Philadelphia, Pa., 1951. 113/4 x 91/4 in., New Series, Vol. 41, Pt. 3, pp. 387-591. Indexed. \$2.00.

It is not often that a reference book makes entertaining as well as informative reading. This is true of Mrs. Allen's text, which is well illustrated by photographs of old engravings. All those interested in American history and ornithology will be satisfied by the short but highlyinformative biographies, for example, of Mark

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By Arthur Cleveland Bent, Dover Publications, New York, 1951. 91/2 x 61/4 in., 2 vols., 244 and 316 pp. Illus. Indexed. \$8.00.

Many readers will welcome the initiative taken by Dover Publications in reprinting this fine Bent classic in unabridged form, with all the original illustrations and bound in cloth. For professionals and amateurs alike, there is no more valuable source of information on birdlife in North America than the Bent series. Unfortunately, shortly after the various volumes have appeared as Bulletins of the National Museum, they have been out of print, and worn, unbound copies have been selling at high prices. Every phase of birdlife is covered in this excellent reprint, including courtship, food, nesting habits, plumages, molts, flight, migration, range and distribution. Dover plans to reprint 13 other volumes of the Bent series.

#### STUDIES IN BIRD MIGRATION: BEING THE COLLECTED PAPERS OF H. CHR. MORTENSEN 1856-1921

Edited by Poul Jespersen and A. Vedel Taning, Munksgaard, 6 Nooregade, Copenhagen, Denmark, 1950. 101/4 x 63/4 in., 296 pp. Illus. with maps. Indexed. Paper-covers. \$3.25.

The Danish ornithologist, H. C. Mortensen, was the first to use the ring-marking (banding) method on an extensive scale for the scientific study of bird migration. The present book, an English translation of his collected ornithological papers, together with a biography, is a valuable contribution to the history of bird-banding and the migration of European birds.

#### INSECT NATURAL HISTORY

By A. D. Imms, Blakiston Company, Philadelphia, Pa., 1951. 83/4 x 6 in., 317 pp. Illus. Indexed. \$5.00.

Because it was originally written for the layman, this excellent text for a beginning course in entomology uses a minimum of scientific terms and the details of anatomy and classifica-



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#### STALKING BIRDS WITH COLOR CAMERA

By Arthur A. Allen, edited by Gilbert Grosvenor, National Geographic Society, Washington, D. C., 1951. 101/2 x 71/2 in., 328 pp. \$7.50.

Readers of the National Geographic Magazine will find brought together here, some of the most popular articles about birds published in recent years by that magazine, including "Freezing the Flight of Hummingbirds," by H. E. Edgerton, R. J. Niedrach and W. Van Riper. The subtitle of this book reads "a presentation of 331 illustrations in natural color from Kodachrome and ektachrome photographs showing 226 species of North American birds." Most of these have been taken by Dr. Allen himself, whose skill as a bird photographer and accomplishments as Professor of Ornithology at Cornell University have made him internationally known.

#### PHOTOGRAPHY AFIELD

By Ormal I. Sprungman, The Stackpole Company, Harrisburg, Pa., 1951. 101/4 x 71/2 in., 446 pp. Illus. Indexed. \$7.50.

Amateurs interested in wildlife photography will find in this highly readable book sound technical information for the pursuit of their hobby. The author discusses the various types of cameras available, their practical use in the field, and the "tricks" of professionals. The book is in two sections: still photography and "movie" photography. Mr. Sprungman has been camera editor of Sports Afield since 1934.

#### DECIDUOUS FORESTS OF EASTERN NORTH AMERICA

By E. Lucy Braun, Blakiston Company, Philadelphia, 1950. 914 x 61/4 in., 596 pp. Illus. with maps. Indexed. \$10.00.

This text presents the basic facts in the ecology, succession, and geography of the deciduous forests of eastern America. It discusses the composition of virgin forests, and compares various climax communities. Because of its presentation of original forest conditions, it should be ex-

tremely useful to those who are interested in the conservation of our wilderness areas and the relationship between wildlife and environments.

#### WILDFLOWERS; HOW TO KNOW AND ENJOY THEM

By Samuel H. Gottscho, Dodd, Mead & Company, New York, 1951. 63/4 x 41/2 in., 192 pp. Indexed. \$2.75.

This little field-guide for the beginner presents the wildflowers by color groups. More than half of the species mentioned are illustrated in color reproductions of Kodachromes taken by the author. The remainder are in black and white. The general information about wildflowers and wildflower photography makes this a book of considerable popular appeal.

#### ADVENTURES WITH REPTILES; THE STORY OF ROSS ALLEN

By C. J. Hylander, Julian Messner, Inc., New York, 1951. 83/4 x 6 in., 174 pp. \$2.75.

This is a kind of success story that shows how a self-educated naturalist can turn a hobby into a vocation. Ross Allen is a herpetologist who owns and operates the Reptile Institute in Silver Springs, Florida, and his special interest is in crocodiles and alligators. During the past 25 years he has made exploratory trips to Central and South America, and has spent many days afield in the Florida Everglades and Okefenokee Swamp.

#### WONDERS OF THE SEASHORE

By Jacquelyn Berrill, Dodd, Mead & Company, New York, 1951. 10 x 7 in., 69 pp. Illus. by the author. \$2.50.

These are true stories of sea animals in simple words and clearly-detailed pictures. The author is the wife of N. J. Berrill, Professor of Marine Zoology at McGill University, Toronto, Canada.

#### PLANTS IN THE CITY

By Herman and Nina Schneider, John Day Company, New York, 1951. 834 x 634 in., 96 pp. Illus. Indexed. \$2.50.

This little book will enable many city children to have fun experimenting with plants just as their country cousins do—and to learn much about the fundamentals of botany at the same time. Both the authors and the illustrator are teachers, and Herman Schneider is supervisor of science and nature study of the New York City elementary schools.

#### MUDDY WATERS; THE ARMY ENGINEERS AND THE NATION'S RIVERS

By Arthur Maass, foreword by Harold L. Ickes, Harvard University Press, Cambridge, Mass., 1951. 81/2 x 53/4 in., 306 pp. Indexed. \$4.75.

The U.S. Army Engineers are responsible for developing America's water resources for navigation, flood control, hydroelectric power, and many other purposes. How well the Corps of Engineers has done the job is a controversial question and every thoughtful citizen should read this account of its activities, inasmuch as huge sums of tax money are spent on the projects described.

#### THE LIVING TIDE

By N. J. Berrill, Dodd, Mead & Company, New York, 1951. 53/4 x 83/4 in., 256 pp. Illus. with photographs. Indexed. \$1.00.

The author, who is professor of zoology at McGill University, narrates some of the mysteries of animal and plant life in the sea. Written in clear and easy style, this is an excellent introduction to the fascinating world of ocean life.

#### NATURE INTERLUDE: A BOOK OF NATURAL HISTORY QUOTATIONS

Compiled by E. F. Linssen, Williams & Norgate, Ltd., 36 Great Russell Street, London, W.G.1, England, 1951. 51/4 x 81/4 in., 256 pp. Indexed. 12s.6d.

Divided in three parts—animals, plants, nature—each arranged in alphabetical order, this little book is a good international selection of natural history quotations in prose and poetry.

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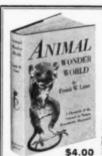
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#### THE BIRDS OF MICHIGAN

By Norman A. Wood, University of Michigan Press, Ann Arbor (Univ. of Michigan Museum of Zoology, Misc. Publ. #75), 1951. 10 x 63/4 in., 559 pp. Paper covers. Indexed. 25 photographs. \$1.00.

A reference book treating each bird species in Michigan; includes a brief summary of its status, the earliest published authentic report of occurrence in that state, and a detailed account of present status under headings of spring, summer, fall and winter. Places, persons and references are fully identified and easy to find in the bibliography.

#### WHERE BIRDS LIVE; HABITATS IN THE MIDDLE ATLANTIC STATES

Edited by Shirley A. Briggs and Chandler S. Robbins, Audubon Society of the District of Columbia, Box 202, Benjamin Franklin Station, Washington 4, D. C., 1951. 9 x 6. in., 58 pp. Illus. 75¢.

Prepared primarily to assist bird watchers of the Washington, D. C., region, the chapters of this booklet appeared previously in the Atlantic Naturalist and its predecessor the Wood Thrush. The booklet will no doubt appeal to a wider audience interested in plant and bird associations. Attractive black-and-white drawings by Bob Hines and Shirley A. Briggs, and many photographs illustrate the text.

#### BIRDS OF MONTEZUMA CASTLE AND TUZIGOOT NATIONAL MONUMENTS

By Henry H. Collins, Jr., Southwestern Monuments Association, Box 2011J, Santa Fe, New Mexico, 1951. 81/4 x 51/2 in., 14 pp. Colored illustrations by Roger Tory Peterson. 25¢.

This booklet describes the more common birds which can be seen in these monuments, their habits, and lists of those that have been recorded there, with localities that should be of interest to bird watchers who may visit the monuments.

#### PRACTICE OF WILDLIFE CONSERVATION

By Leonard W. Wing, John Wiley & Sons, Inc., New York, 1951. 91/4 x 6 in., 412 pp. Illus. Indexed. \$5.50.

Written in clear, concise language, this textbook covers conservation and management of wildlife, along with administration and policy. The layman will find much information on the habits and habitats of birds, mammals and fishes as well as a history of conservation in this country. Excellent bibliographies conclude eath chapter, with a comprehensive index. This book is one of the best of its kind.

#### HOW TO KNOW THE AMERICAN MAMMALS

By Ivan T. Sanderson, Little, Brown & Co., Boston, 1951. 73/4 x 43/4 in., 164 pp. Illus. with drawings by the author and color plates by Louis Agassiz Fuertes. \$2.50. Also available in paper-covers from New American Library Mentor Book, 7 x 41/4 in. Indexed. 35&.

The author, who is well known as an artist and a naturalist, has written and illustrated this little field guide for those who have no immediate need for a more technical book. Although condensed and simplified, it is a source of basic information. An index to common names and 10 pages illustrating animal tracks are valuable aids to practical identification in the field.

#### ZOO BIRDS

By David Seth-Smith, Penguin Books, Inc., 3300 Clipper Mill Road, Baltimore, Md., 1951. 83/4 x 71/4 in., 31 pp. Illus. by Maurice Wilson. Paper covers. 35/e.

This beautifully illustrated booklet gives condensed information on the foods and habits of selected families of birds from all over the world.

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NATURE IN THE NEWS-Continued from Page 51

of birds. It was a race against time. Plume hunters already had several species on the road to extinction. In 1892 one millinery agent alone had shipped 130,000 Florida birds north for millinery purposes.

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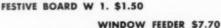
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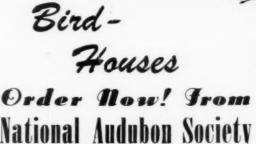


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